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Editors' preface

The "Journal of Education, Innovation, and Communication (JEICOM)" is a Fully Peer-Reviewed Open Access journal publishing articles from all areas of education, innovation and communication. JEICOM's scope is to provide a free and open platform to academics, researchers, professionals, and postgraduate students to communicate and share knowledge in the form of high quality empirical and theoretical research that is of high interest not only for academic readers but also for practitioners and professionals.

JEICOM welcomes theoretical, conceptual and empirical original research papers, case studies, book reviews that demonstrate the innovative and dynamic spirit for the education and communication sciences, from researchers, scholars, educators, policy-makers, and practitioners in education, communication, and related fields. Articles that show scholarly depth, breadth or richness of different aspects of social pedagogy are particularly welcome.

The numerous papers presented every year during the conferences organized by our Institute, the Communication Institute of Greece, enables us and our editorial board, to have access to a plethora of papers submitted. Following a rigorous peer-reviewed process only a selection of the papers submitted, is published twice a year. The current issue of the "Journal of Education, Innovation, and Communication (JEICOM)", is the first issue of the first volume (2019).

In this issue, we present two articles from the field of education and Innovation and two from the field of Communication/leadership:
The first article, *Innovating in university teaching through classroom interaction*, by Carmen Álvarez Álvarez, Lidia Sanchez-Ruiz, Andrea Ruthven and Javier Montoya del Corte, discusses a Teaching Innovation Project (TIP) as a means of confronting the reality of this matter and advancing in it through an interdisciplinary collaboration involving 16 teachers, who participate as external observers, representing all the Faculties from the University of Cantabria (Spain).

The second article, *A Contextual Learning Approach Based on Augmented Reality to Improve Students' Scientific Literacy'*, by Yang Yang, Enrui Liu, Sining He, and Su Cai, propose a contextual learning approach based on augmented reality(AR) technology. A specially developed AR system created a virtual-reality combined environment for students taking an optical inquiry task about rainbow in grade 5. Moreover, a mixed methods research approach was used to analyze understanding about scientific concepts, use of inquiry process skills, and higher order thinking skills of the students who learned with the proposed approach.

Does sharing leadership actually work? An evaluation of the benefits and drawbacks of shared leadership, is the third article presented in this issue, by Nathan Herbst, Carlos E. Rios-Collazo, and Jesse Denison. This paper is a novel contribution to this field of inquiry concerning Leadership. Surveying prominent leaders from several faith-based organizations in the United States that utilize shared leadership, five limitations were discovered, including the difficulty of the model, a potential

lack of follow-through, a possible lack of efficiency, a general lack of acceptance of the model, and the danger of immature or usurping team members.

The fourth article, *Leadership challenges of urban institutions of higher learning, which serve a predominantly diverse and multi-cultural student population*, by Michael A. Altamirano, examines the unique leadership challenges confronted by staff and faculty of higher education institutions that serve a predominantly diverse and multi-cultural student population in urban areas of the United States.

Dr Margarita K. Kefalaki* and Dr Fotini Diamantidaki **
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Innovating in University Teaching Through Classroom Interaction

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Abstract

Previous research has shown that the best educational practices are built on the basis of interaction in the classrooms, regardless of their level. However, the dialogue among the students themselves and between them and the teacher is still more scarce than desirable, especially in the university context. Taking this weakness into account, the authors of this contribution propose a Teaching Innovation Project (TIP) as a means of confronting the reality of this matter and advancing in it through an interdisciplinary collaboration involving 16 teachers, who participate as external observers, representing all the Faculties from the University of Cantabria (Spain). Here, we present the design of the TIP that we are currently developing, the working methodology and an advance of the first partial results. Specifically, each of the 16 people involved in this TIP will externally evaluate 6 teachers from their own field of knowledge. The aim is to identify varied interaction practices throughout the university. To develop this process we have designed three observation scales: one for students, another for the teacher in action and a third for the external observer. Data will be collected between October 2018 and May 2019. The ultimate goal is to promote innovation in university teaching through interaction in the classroom in order to achieve the active learning of the students. We hope to contribute to inspire other universities that may be interested in following our steps.

Key Words

Interaction, Innovation, Higher Education, University Teaching, Spain

1. Introduction

Previous empirical research has shown the advantages of teaching based on interaction, as well as dialogue in the classroom both amongst the students themselves and between them and the teacher. Although it has been demonstrated that its implementation is essential in the improvement of teaching quality in the field of Higher Education, interaction as a teaching-learning methodology is still only used by a minority in Spain (Álvarez, 2017; Tronchoni, Izquierdo & Anguera, 2018).

We are all aware that lecture-style classes often fail to capture the attention of students, and a methodological change in the classroom that truly matches the European Higher Education Area

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(EHEA) is required. Further, we are convinced that we all, as teachers, can improve our interactive dynamics in the classroom. For this reason, we have proposed the development of a TIP in which the coordinators, researchers and collaborators jointly analyse the classroom interactions that are currently occurring in the UC.

In a recent investigation carried out at the University of Cantabria-UC (Álvarez, 2017), the minimal presence of interactive teaching-learning methods in university teaching was verified. Monological discursive practices on the part of the teachers, in which there is hardly room for the interaction of the teaching staff with the students or of the students amongst themselves, were predominant.

Students easily identify classroom practices ubiquitous to lecture-style classes wherein the teacher does not interact but rather follows a more traditional academic logic, as well as similar practices that do not engage with the doubts, questions, and observations that may arise during the course of the classes. Likewise, students also criticize the misuse and abuse of PowerPoint.

The study also concludes that, in part due to their scarcity, students experience serious difficulties in identifying interactive practices in which the teaching-learning process exceeds the previously mentioned models. Most of the students interviewed have not been able to identify any, or if they can it is in other stages of education or in the non-formal environment, referring mainly to the classes received in the private academies located in front of the University Campus.

The experiences of teaching-learning by interaction in the university constitute "isolated cases", but they are very positively valued by the students. Students demand a methodological change in which the interaction in the teaching-learning process is prioritized. Those who have had some interactive experiences claim to have been more involved in their studies and feel they are members of the educational process, ask more questions, have delved more into the content, have enjoyed the subject, have paid more attention in class, and have obtained better academic results. A methodological change is required in current university classrooms and the practices of teaching-learning by interaction are essential to propitiate it.

The group of professors who designed this TIP have proposed to collaborate with each other to analyse and improve interaction in our university classrooms. Betting on the introduction of dialogical practices of teaching-learning in our university is something viable, necessary, and urgent, and could suppose a great advance towards the improvement of the teaching quality within our Higher Education system. In order to carry out our proposal, we will continue the evaluation model of university teaching proposed by Medina (2012), working at three levels: self-evaluation, co-evaluation and hetero-evaluation.

The team of teachers that designed this PID have the firm conviction that our teaching activity can and should be analysed and improved in terms of interaction. We are an interdisciplinary group of young people with a desire to contribute and improve, who took part in a training course about "Teaching-learning by interaction" organised by the UC in 2016, 2017 and 2018.

2. State of the art

This section has three aims. Firstly, the concept of interaction will be described in greater detail. Secondly, working with this definition, and given the absence of specific instruments for measuring this concept, a brief overview of the techniques most frequently used in the area of teaching will be given. Thirdly, after this review, a brief conclusion will be drawn of the most useful techniques for the present project and its application.

2.1.The Concept of Interaction

The concept of interaction, considered in some fields as similar to the concept of dialogism, and its effects on the learning process have been amply studied in the literature. However, the authors of the present study were surprised to find that, upon conducting a literature review, there seemed to be no agreed upon definition for the concept in the area of teaching (Duschl & Osborne, 2002; Gauci, Dantas, Williams, & Kemm, 2009; Exley, 2013; Haneda, Teemant, & Sherman, 2016; Majlesi & Broth, 2012; Scott et al., 2006; Stockero, Rupnow, & Pascoe, 2017).

Among the studies that did include a definition of the concept, given its clarity and capacity for synthesis, the work of Howe and Abedin (2013) stands out. They defined interaction as a combination of communicative exchanges in which one individual addresses another individual or group of individuals and receives at least one response in return. This definition, applied to the field of education, is the one selected for the present study.

In terms of interaction as it applies to teaching, it is worth highlighting the work developed by Exley (2013). As this author notes, in the classroom it is possible to distinguish three categories of interaction:

- Task- learners independently interacting with tasks and resources
- Peers- interacting with fellow learners
- Teacher- interaction between learners and teachers /facilitators

Bearing in mind all of the above, we conclude that it is practically impossible to understand the learning process without interaction given that, regardless of the type, it is an essential component of teaching (De Longhi et al., 2012; Fusco, 2012). However, the usual communication within the classroom tends to follow a unidirectional pattern, a lecture-style, and this is fundamental when it comes to defining the didactic relationship established in university classrooms given that interactive methodologies of teaching-learning are still used infrequently (Álvarez Álvarez, 2017). Instead, monologic-discursive methods, similar to master classes and lectures by the professor, are more frequent, thereby leaving minimal space for interaction between the teacher and the students and among the students themselves.

However, national and international empirical research has shown the advantages of pedagogical methods based in interaction, as well as on the dialogue in the classroom that occurs among students and between students and their teachers at all levels of education. Further, implementing this interaction in the classroom is demonstrably necessary in order to improve teaching quality in Upper Education (Álvarez Álvarez, 2017; De Longhi et al., 2012; Fusco, 2012; Tronchoni, Izquierdo, & Anguera, 2018; Wells, 2001).

2.2.Evaluating University Teaching

The focus of this project is to demonstrate the basis and the results of the construction of an observational tool to measure the level of interaction in university classrooms since there are few academic studies directed at analysing and measuring these interactions in university classrooms (Scott et al., 2006; Tronchoni et al., 2018; Wells, 2001).

After reviewing the literature, we the authors were unable to locate a single article that proposed a method or designed a specific instrument with which to measure interaction in the classroom. Faced with these results, and with the aim of proposing an adequate instrument, a more general review was

conducted which sought to identify the evaluation methods used in teaching and that, by extension, could be applied to the evaluation of interaction.

Evaluation is the process by which proof or evidence is obtained (objective qualitative and quantitative information) by systematic means such that weaknesses (or areas of improvement) can be detected and corrected. Additionally, there are two types of evaluation: external, undertaken by agents who are external to the centre, and internal, undertaken by those individuals involved in the teaching and with the clear goal of improving the teaching activity.

Internal evaluation, given its goal, is of greater interest for the present study and, as such, we have identified a variety of methods. One of the primary methods for internal evaluation is that done by students of their teachers, for example via surveys or questionnaires. It is worth noting that, even though this is one of the most well-known and used methods, its utility is debatable (Crumbley, 2001).

A second method of evaluation is the Critical Friends model. A critical friend is a person who offers constructive criticism after observing the work of another. In taking on this role, the critical friend dedicates time and effort to understanding the context in which the work under evaluation is developed and the objectives toward which the observed person is working (Costa & Kallick, 1993). Along these same lines, a Critical Friends Group is a group of teachers who decide to work collaboratively with the objective of analysing how teaching is currently carried out in order to propose improvements that will have a positive effect on students' learning and, at the same time, on the teacher's experience (Bambino, 2002).

As discussed by Andreu et al. (2003), in order for the critical friends method to be correctly applied, three requirements must be met: participants must be involved; the teaching method, and not the contents, must be analysed and the evaluation must not affect promotion; and, prior to undertaking any evaluation, the criteria to be used must be decided and agreed upon by the critical friends.

Finally, a third method is self-evaluation, understood as the process by which the evaluating agent and the evaluated agent are one and the same (Fuentes-Medina & Herrero, 1999). In the case of teaching, this is the process through which the teacher, with a capacity for self-criticism, analyses and reflects on their own teaching practise.

Having described the most common methods of internal evaluation identified in the literature, it is worth pointing out that there is a tendency towards an integral system of evaluation, also known as 360º evaluation. This type of evaluation is present not only in education but also in general terms in Human Resources as the most complete system of evaluation when it comes to evaluating the level of development in organisations who claim a high degree of internal familiarity (Andreu et al., 2006). One of the principle advantages of this method is that it can obtain information from a variety of sources, avoiding the biased results that can occur when a single vision is used (Andreu et al., 2006). The proposed integral evaluation method coincides with the model for university teaching evaluation proposed by Medina (2012) which identifies three levels of work that must be explored: self-evaluation, co-evaluation, and hetero-evaluation.

In this article, and following the proposal offered by Medina (2012), we propose a questionnaire that will enable the measurement of the level of interaction in university classrooms, as well as identifying the best interactive practises, from a triple perspective: the observed teacher (self-evaluation, such that teachers self-evaluate their interactions in the university classroom), external observer (hetero-evaluation, such that other teachers serve as external observers and evaluate the interactions of other teachers in the university classroom), and students (co-evaluation, such that students evaluate our interactions in the university classroom). This triple, collaborative process has great potential (Andreu

et al., 2006) and could generate shared learning, permanent development, and foment continuous improvement in teaching practise through greater interaction.

3. Teaching evaluation model

To carry out our proposal we follow the university teaching evaluation model proposed by Medina (2012). This author considers that analysing university teaching is a complex task, but one that is necessary to advance in the thinking and relevance of our teaching practice. Medina (2012) offers a three-tiered framework that we intend to implement: self-evaluation, co-evaluation and hetero-evaluation.

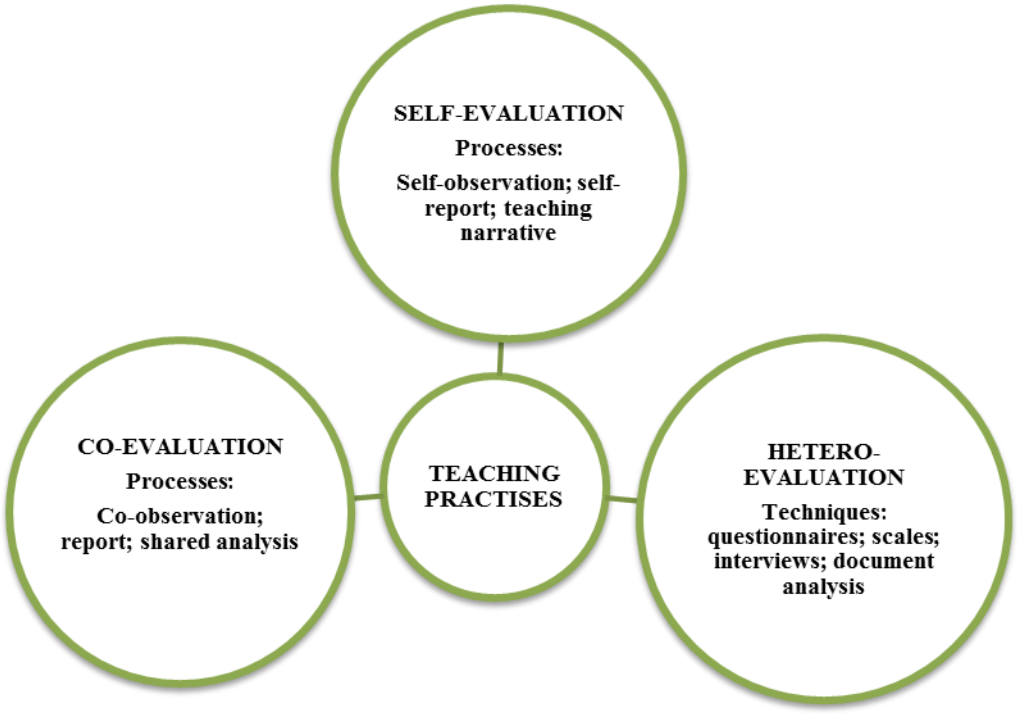

Figure 1: Three Levels of Teaching Practise Analysis

Analysing university teaching in order to promote the implementation of self-assessment, co-evaluation and hetero-evaluation practises is essential in order to recognise, become aware of and opt for the most appropriate improvement decisions in order to innovate in teaching.

To promote self-evaluation, each of us begins with a self-critical study by completing a self-evaluating questionnaire that we have designed ourselves. To achieve the co-evaluation we have decided to work in collaboration with other colleagues by visiting their classes to give them feedback on their work and allowing them to visit ours for the same purpose. This collaborative process generates shared learning, permanent development and helps to promote continuous improvement. To complete the process and conduct a hetero-evaluation, we will propose to the students that they also evaluate our interactions in the university classroom.

In this triple process, we will use questionnaires and measurement scales in whose design, approach and development we have been working. Based on the results we obtain, we will implement measures for innovation and teaching improvement, promoting a more interactive teaching approach in the classroom.

3.1. Project aims

With our TIP we aim to analyse and improve interaction in the university classrooms in which we teach through the following:

a) Encourage student participation through active methodologies and promote student learning.
b) Encourage student participation through innovative and active learning methodologies that promote student learning
c) Improve theoretical and practical classes through innovative teaching methodologies to promote interaction in the classroom
d) Develop a 'best practises guide' for interactive classroom practises to be shared with all teachers and lecturers throughout the university
e) Propose a new specific training course that could be integrated into the UC Teacher Training Plan
f) Disseminate our findings from the TIP across the wider university/higher education environment.

3.2. Working plan

This is an interdisciplinary project in which teachers from a wide variety of degrees (all the Schools and Faculties from the UC) will collaborate. Therefore, the transfer of the planned innovations is intended to be total, being useful for any subject of any degree.

The TIP will be developed mainly in undergraduate courses, although it could also be developed in some postgraduate courses our idea is that these will be less present.

To ensure that the project has an impact on all the Centres, we have contacted at least one professor from each of them within the UC. Further, we will seek the cooperation of other teachers, who will allow us to attend different classes and evaluate, as observers, the interaction in the classroom.

The work plan is structured as follows:

Stage 1. Prepare the three questionnaires. The first questionnaire is for teachers to self-assess their interactions in the university classroom; the second one is for students to evaluate their teacher's interactions in the university classroom; and the third questionnaire is for the external observer to evaluate the interactions in the university classroom carried out by the other professors. This step is the responsibility of the coordinators and researchers of the TIP. The initial design was done in July 2018. This first draft was shared with a group of 20 secondary school teachers so that they could give us feedback. It was also shown to the 16 university teachers who comprise the researchers of this group.

Stage 2. Attend classes and complete the questionnaires along with all those involved (teachers, students and observers). The organisation and carrying out of this stage is the individual responsibility of all the members in this TIP and will be done between September and May of 2019. Each external observer is responsible for giving feedback to the observed teacher.

Stage 3. Collect and record information for analysis. The coordinators and researchers of the TIP are responsible for this and it will be carried out between November 2018 and May 2019.

Stage 4. Analyse the results obtained from the different questionnaires. This will be done between May and June 2019.

Stage 5. Share the results with all the team members and extract conclusions for later dissemination. In this final stage of the TIP, we will propose a best practises guide for interaction in the classroom, as a result of the observations made and the results obtained, with the aim of making it available to

all the teaching staff as well as the organisms responsible for teaching quality and planning. The final aim is to communicate and disseminate the results of the project in our academic environment in order to make the initiative public along with its conclusions and to promote its application within the university community.

4. Preparation of the three questionnaires

Given the lack of tools for measuring interaction, we have created one based on the literature reviewed on the topic, primarily the work of Wells (2001) and De Longhi (2012), as well as the first author of this article, who is a specialist in interaction and in dialogic teaching practises in the classroom.

Table one shows a summary of the aspects of interaction that we sought to measure with each of the items included in the measuring tool. The items, phrased as questions on the questionnaire, and indicating that respondents should indicate their degree of agreement/disagreement on a scale of 1-7, are those used in the students' questionnaire, while those for the teacher observed and the external observer are the same with minor grammatical adjustments to fit the respondent. The questionnaire, with instructions that indicated not only that the information provided was entirely confidential but also that it should only contemplate the class under observation that day (not the class in general), also provided a space for respondents to describe in their own words their observations regarding what they considered the best interactive practise observed as well as the least effective. The external observer and the teacher were also asked to include their reflections on what the teacher and the students did during the interaction, the length of time dedicated to interaction, as well as any material or technology employed. Further information collected on all three questionnaires included the number of students in class that day and the gender of the students present. Teachers were also asked to indicate their rank, while students were asked to indicate what they considered the general level of participation in the class and their own level of participation in class.

Table 1: Aspects of Interaction to Be Measured and the Resulting Item on the Questionnaire (Álvarez-Álvarez, Sánchez-Ruiz & Montoya-del-Corte, 2019).

Variables to be measure	**Items on the questionnaire**
Teacher's attitude	The teacher demonstrated a positive attitude with the students: respectful, warm, and polite.
Contrast between interaction and explanation	The class was more interactive than expositive.
Asking about doubts	The teacher inquired if students had doubts in order to resolve them.
Closed questions	The teacher asked closed questions (with a clear correct or incorrect answer).
Open questions	The teacher asked open questions (with a wide range of possible answers or solutions).
Diversity of opinions	The teacher asked questions that elicited a variety of opinions from the students.
Tension teacher-students	There were signs of tension between the teacher and the students.
Tension between students	There were signs of tension between the students.

Excessive intervention by students	One student "excessively" intervened in the class.
Unplanned content	Content not in the teaching plan was addressed during class time.
Attending to students before/after class	The teacher took time either before or after class to attend to the students.
Promoting reflection	The teacher expressed an idea in such a way that students were puzzled and encouraged to use their reasoning.
Understanding content	The teacher ensured that the students understood all the content taught.
Quality contributions from the students	The teacher made an effort to ensure that students' contributions were valuable in order to build knowledge in the classroom.
Individual activities	The teacher proposed individual activities during class time.
Pair or group work	The teacher proposed pair or group work during class time.
Questions from students	The students asked questions during class time.
Dialogue and debate	There was dialogue and debate during the class.
Interaction technologies	The teacher used technology as a means of encouraging interaction in the class.
Attention from the students	The teacher caught and held the students' attention.
Questions in class. Cognitive challenges	The questions posed by the teacher offered cognitive challenges that were not easily resolved, thereby requiring students to think.
Questions in class. Time to think	The teacher gave students sufficient time to reason out the answers to the questions posed.
Questions in class. Asking new questions	The teacher took advantage of students' responses to formulate new questions.
Questions in class. Reformulating answers	When students responded to the teacher's questions, they were then invited to reformulate their answers.
Questions in class. Constructing knowledge	The teacher took advantage of students' responses to construct knowledge.
Questions in class. Synthesising and unifying	After students' responses, the teacher offered a synthesis, a unification, a rephrasing and/or an improvement of the student's version.
Unsuitable intervention from students. Dismiss through arguments.	When a student has made an unsuitable intervention, the teacher has corrected it by offering arguments.
Unsuitable intervention from students. Penalising errors.	The teacher in no way penalised students for incorrect answers.

Unsuitable intervention from students. Penalised by classmates.	Students in no way penalised incorrect answers from their classmates.
Students' questions. The teacher's response.	The teacher responded to all the questions the students asked during the class.
Individual activities. Dialogue between students.	During the individual activities, students talked amongst themselves.
Individual activities. Teacher feedback.	The teacher offered feedback during individual activities that helped the students to improve.
Pair or group work. Dialogue between students.	During the pair or group work, the students talked amongst themselves.
Pair or group work. Teacher feedback.	The teacher offered feedback during pair or group work that helped the students to improve.
Debate. The teacher correctly moderates.	The teacher knew how to moderate classroom debates so that students could intervene in a polite and organised manner.

5. Expected results

At the time of writing (June 2019), the project participants are visiting classes and collecting data. Specifically, more than 80 classes have already been visited and the responses of more than 2100 students have been obtained.

Additionally, the data analysis itself will include an initial phase of basic descriptive analysis that will then be enhanced with more complex analysis. Examples include an analysis of the factors that make up or compose the interaction concept. This could also be a contribution of interest since, if the factors that make up the interaction are known, they can be enhanced in the classroom. The proposal and validation of more complex causal models could be an additional step after the identification of factors.

All of the above can be complemented through the analysis of different variables such as class size, teacher experience or degree, among others, as these may have some effect on the level of interaction and, if they do, we aim to consider what this is.

Finally, and given that the questionnaire being designed includes qualitative questions, the possibility of content analysis using software tools such as Atlas.ti or similar is also raised. The objective of this type of analysis will be to identify additional information of relevance that could not be captured with the quantitative questions of the study.

6. Conclusions

In addition to responding to the objectives set out in the teaching innovation project, as discussed in the previous paragraphs, we also intend to analyse the data in greater depth in order to contribute to the advancement of the field of research on interaction.

The first contribution that we expect to make is the proposal of a questionnaire that allows for measuring or quantifying the level of interaction that exists in the classroom. We believe that this would be a contribution of quality since no previous studies have been found that propose a measurement tool of this type.

We consider that one of the key aspects of this contribution is the triple perspective that is proposed in the design of the questionnaire: self-evaluation, co-evaluation and hetero-evaluation.

Through the use of the questionnaire we hope to ascertain the level of interaction; to analyse the factors that can influence the attainment of a higher or lower levels of interaction (characteristics of the teacher, the group of students, and the subject itself); to analyse the effects of the interaction on the results obtained; and to identify interactive practises that may be applicable to different areas. Additionally, based on the qualitative analysis of the data obtained, we intend to obtain a manual of best practises for interaction.

As far as limitations are concerned, one of the main ones is the preliminary nature of this work. Thus, given that the work is in the data collection phase, it has not yet been possible to validate the questionnaire. This is to be considered as a future line of work together with the analysis of the results. On the other hand, the scope of the study, only centred on the UC, is another limitation. However, we believe that this first project has to be seen as a pilot plan that can be extended to other Spanish universities and, certainly, universities outside Spain. In addition, the multidisciplinary nature of the innovation project, comprised of teachers from the different fields of knowledge must be emphasized.

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8. References

Álvarez, C. (2017). ¿Es interactiva la enseñanza en la Educación Superior? La perspectiva del alumnado. *REDU. Revista de Docencia Universitaria*, 15(2), 97-112. DOI: https://doi.org/10.4995/redu.2017.6075

Álvarez-Álvarez, C., Sánchez-Ruiz, L., & Montoya-del-Corte, J. (2019). Propuesta de un cuestionario para medir el nivel de interacción en las aulas universitarias: versión para docentes, estudiantes y observadores. *Working Papers on Operations Management*, 10 (1), 1-28.

Andreu, R., Canós, L., Juana, S., Manresa, E., Rienda, L., & Tarí, J. J. (2006). Quality performance assessment as a source of motivation for lecturers: A teaching network experience. *International Journal of Educational Management*, *20*(1), 73–82. https://doi.org/10.1108/09513540610639602

Andreu, R., Canós, L., Juana, S., Manresa, E., Rienda, L., & Tarí, J. J. (2003). Critical friends: A tool for quality improvement in universities. *Quality Assurance in Education*, *11*(1), 31–36. https://doi.org/10.1108/09684880310462065

Bambino, D. (2002). Critical Friends. *Educational Leadership*, *59*(6), 25–27.

Costa, A. L., & Kallick, B. (1993). Through the Lens of a Critical Friend. *Educational Leadership*, *51*, 49–51.

Crumbley, L. (2001). Students' perceptions of the evaluation of college teaching. *Quality Assurance in Education*, *9*(4), 197–207.

Duschl, R., & Osborne, J. (2002). Supporting and Promoting Argumentation Discourse in Science Education. *Studies in Science Education*, *38*(1), 39–72. https://doi.org/10.1080/03057260208560187

Exley, K. (2013). Encouraging Student Participation and Interaction. *Reflections. Queens University Belfast*, 1–4. Retrieved from https://www.qub.ac.uk/directorates/AcademicStudentAffairs/CentreforEducationalDevelopment/FilestoreDONOTDELETE/Filetoupload,432480,en.pdf

Fuentes-Medina, M., & Herrero, J. R. (1999). Evaluación docente: hacia una fundamentación de la autoevaluación. *Revista Electrónica Interuniversitaria de Formación Del Profesorado*, *2*(1), 353–368.

Fusco, E. (2012). *Effective Questioning Strategies in the Classroom: A Step-by-Step Approach to Engaged Thinking and Learning, K-8*. New York: Teachers College Press.

Gauci, S. A., Dantas, A. M., Williams, D. A., & Kemm, R. E. (2009). Promoting student-centered active learning in lectures with a personal response system. *Advances in Physiology Education*, *33*(1), 60–71. https://doi.org/10.1152/advan.00109.2007

Haneda, M., Teemant, A., & Sherman, B. (2016). Instructional coaching through dialogic interaction: helping a teacher to become agentive in her practice. https://doi.org/10.1080/09500782.2016.1230127

Howe, C., & Abedin, M. (2013). Classroom dialogue: a systematic review across four decades of research. *Cambridge Journal of Education*, *43*(3), 325–356. https://doi.org/10.1080/0305764X.2013.786024

Majlesi, A. R., & Broth, M. (2012). Emergent learnables in second language classroom interaction. *Learning, Culture and Social Interaction*, *1*(3–4), 193–207. https://doi.org/10.1016/J.LCSI.2012.08.004

Medina, A. (2012). Evaluación de la docencia universitaria. En A. Herrán & J. Paredes (Coords.). *Promover el cambio pedagógico en la universidad*. Madrid: Pirámide.

Scott, P. H., Mortimer, E. F., & Aguiar, O. G. (2006). The tension between authoritative and dialogic discourse: A fundamental characteristic of meaning making interactions in high school. *Science Education*, *90*(4), 605–631. https://doi.org/10.1002/sce.20131

Stockero, S. L., Rupnow, R. L., & Pascoe, A. E. (2017). Learning to notice important student mathematical thinking in complex classroom interactions. *Teaching and Teacher Education*, *63*, 384–395. https://doi.org/10.1016/J.TATE.2017.01.006

Tronchoni, H., Izquierdo, C. & Anguera, M. T. (2018). Interacción participativa en las clases magistrales: fundamentación y construcción de un instrumento de observación. *Publicaciones*, 48(1), 81-108. DOI: http://dx.doi.org/10.30827/publicaciones.v48i1.7331

Wells, G. (1999). *Dialogic inquiry: Towards a socio-cultural practice and theory of education*. UK: Oxford University Press.

A Contextual Learning Approach Based on Augmented Reality to Improve Students' Scientific Literacy

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Abstract

Inquiry activities are important and challenging in primary science classes since it is not only related to scientific knowledge, but also to scientific literacy. However, with consideration of limited cost and risk issues, most of optical experiments are insufficient to implement in primary schools, so that students should rely on their own imagination to understand abstract concepts without inquiry activities. In this study, a contextual learning approach based on augmented reality (AR) technology was proposed to cope with this problem. A specially developed AR system created a virtual-reality combined environment for students taking an optical inquiry task about rainbow in grade 5. Moreover, a mixed methods research approach was used to analyze understanding about scientific concepts, use of inquiry process skills, and higher order thinking skills of the students who learned with the proposed approach. The experimental results revealed that the learning approach based on AR was able to assist in the construction of understandings about scientific concepts, provide students opportunities to use inquiry process skills, and develop students' higher order thinking skills. Furthermore, by interviewing the teacher, the benefits and challenges of using this contextual learning approach based on AR were reported. These findings could be valuable references for those who intend to implement contextual inquiry learning activities with AR systems to assist improve students' scientific literacy effectively.

Keywords：contextual learning, augmented reality, Inquiry activities, scientific literacy

1. Introduction

In recent years, science has been paid more and more attention on children's education filed. Science literacy has been regarded as one of the most important qualities that needed to be improved from one's childhood. Inquiry activities play a significant role in science courses to meet the outcomes that make students not only acquire science knowledge but also develop science literacy.

However, it is not easy to carry out inquiry activities in a real class. The equipment of many experiments is so rare and expensive, that schools should take on a lot of expense to get and maintain it. Even though a school owns the equipment, the number of equipment usually won't be enough for

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every student to have the opportunity to experience. Besides, there are some experiments with risk factors always been cancelled, for teachers would be worried about students' operation. So interesting and worthwhile inquiry activities are difficult to implement in primary school.

Augmented Reality (AR) has been used to support students' scientific inquiry these years, and related researches have shown that the combination of AR and some instructional strategies, such as textual scaffold, collaborative scaffold and repertory grid, is able to synergistically guide students in learning process and improve their learning motivation and performance (Tarng, Ou, Lu, Shih, & Liou, 2018; Wu, Hwang, Yang, & Chen, 2018; Yoon, Anderson, Park, Elinich, & Lin, 2018). And some other studies have shown that AR plays a significant role in enhancing students' critical thinking tendency (Chang & Hwang, 2018), group self-efficacy (Chang & Hwang, 2018), concepts constructions (Enyedy, Danish, & DeLiema, 2015) and deeper understanding (Hsiao, Chang, Lin, & Wang, 2016). In this study, we used a contextual learning approach to adapt the learning environment with AR in a fifth-grade science lesson. Moreover, a mixed methods research approach was used to analyze if activities in class effectively improve students' scientific literacy.

2. Literature Review

2.1. Augmented Reality

Augmented reality is a technology that supplements the real world with virtual objects and appears to coexist in the real world. A system based on AR is defined to have the following properties:(1) combines real and virtual objectives in a real environment;(2) runs interactively and synchronously; and (3) aligns real and virtual objects with each other(Azuma et al., 2001; Rt, 1997). By 2010, AR was seen in advertising, education, navigation, and information(Carmigniani, 2011). At first, AR has been used to provide more information for learning activities, and it was more widely used in sightseeing and museum guidance (Bruns, Brombach, Zeidler, & Bimber, 2007; Dunleavy, Dede, & Mitchell, 2009; Liu & Wang, 2009; Miyashita et al., 2008). Since then, the role of AR in museums and science museums has attracted researchers' attention.

Early studies took advantage of AR's character, such as visualizing invisible phenomena, to create better inquiry environments for students when visiting museums. Asai, Sugimoto, and Billinghurst (2010) superimposed the lunar surface in a real environment with AR in a science museum, which effectively inspired the collaboration between parents and their children. Takahashi, Takahashi, Kusunoki, Terano, and Inagaki (2013) presented more text information according to objects with AR to guide visitors, and the found it aroused visitors' interest and promote them construct knowledge. Yoon and Wang (2014) took on the current magnetic field according to the position of appointed objects and conclude AR's roles in science museums. They thought AR could (1) offer inquiry environments, (2) enhance students' comprehension, and (3) promote more expressions and consistency in collaboration.

Some later researches began to focus on the performance of other tools or strategies in AR inquiry environments. Heather Toomey Zimmerman et al. (2015) found that students' understanding of concepts could be enhanced by coordinating images with actual samples. Wernhuar, Yu-Sheng, Chiu-Pin, and Kuo-Liang (2016) showed that combined with GPS, electronic compass, triaxial accelerometer or other sensors on mobile devices, AR applications could create a richer inquiry environment and provide more functions to support students' learning activities. Chen, Chou, and Huang (2016) claimed students' would have better performance if they used not only AR application but also concept map in inquiry activities. Wu, Hwang, Yang, and Chen (2018) pointed out the repertory grid into an AR application also could improve students' learning performance.

In recent years, sites that researchers attempted to use AR have been extended from museums to outdoors and classrooms. H. T. Zimmerman, Land, and Jung (2016) designed an AR application that can present biology information about trees based on trees' location in a botanical garden to study which factors can facilitate learning. Chang and Hwang (2018) used AR to guide students to operate in a flipped learning. Wu et al. (2018) brought AR into a classroom activity to help students know more information about butterflies based on their specimens.

In summary, AR has been paid much attention in primary science education for long years, and its potential in assisting in setting up inquiry environments has been revealed. However, previous studies often ignored the integration of AR-based activities into the daily teaching process. In this study, we used a specially developed learning approach to ensure the full use of AR.

2.2. Contextual Learning Approach

To fully take AR's advantages in inquiry activities in science teaching, a contextual learning approach can be implemented to control process. Contextual approaches are one kind of learning approaches that give a chance to construct the knowledge(Kusmayadi, Riyadi, Kartikaningtyas, & Kusmayadi, 2017). As learning can be conceptualized as a contextually driven effort to make meaning in order to survive and prosper within the world(Falk & Dierking, 2000), presenting essential information in the environment and inspiring learners to inquiry actively are the cores of a contextual learning approach, which are also very consistent with the characteristics of AR technology.

The 5E teaching model is a widely used and modified one among leaning approaches towards inquiry activities in science education(Bybee, 2014). BSCS(Biological Science Curriculum Study) in America put forward and developed the 5E model based on related theories of learning psychology and constructivism, which stated a learning sequence that can help students construct their understandings and come up with new ideas from experience(NASA, 2008). There are 5 activities in the sequence, engagement, exploration, explanation, elaboration and evaluation(NASA, 2008). To integrate AR technology well with science education, we developed a contextual learning approach by adjusting the 5E model based on contextual learning, as shown in Figure 1.

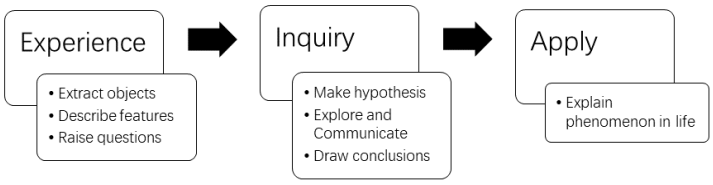

Figure 1 the contextual learning approach

The contextual learning approach consists of three phases, experience phase, inquiry phase and apply phase. In the experience phase of the contextual learning approach, learners will be motivated to participate in the activities in a unique way. By the use of AR, leaners will be placed in a virtual-real combined environment including important information, and they will be inspired to raise questions through observing objects and their features in the environment. In the inquiry phase, AR is used to make it possible for learners to watch and control objects they can't see and interact directly in real life, such as the solar system and molecules in the air. This phase is an organic combination of exploration and explanation in the 5E model. We believe deeper exploration could be inspired by sharing thoughts about the phenomenon, so these two phases could be regarded as an upward spiral. AR can also be helpful in expression because the visual presentation can assist learners to describe their opinion more accurately. In the apply phase, learners use the conclusions to explain other cases in life. AR can be used to offer a framework for thinking.

3. Method

3.1. Research Questions

The research questions of this study are presented below.

Q1: Can the use of AR and the approach benefit students' construction of understandings about scientific concepts in a regular class?

Q2: Can the use of AR and the approach benefit students' improvement of skills about scientific literacy in a regular class?

Q3: Whether the use of the contextual learning approach contributes to supporting inquiry activities with AR in this class?

3.2. Participants

28 students in grade 5 and their science teacher in Chengdu, a city of Sichuan province in China, participated in this study. These students experienced other AR applications before this class to learn how to use the camera to capture special targets and interact with AR environments.

3.3. Instruments

The scale of the inquiry-based tasks analysis inventory (ITAI) was used to conduct an overall analysis of the whole class activities by two observers. And semi-structured interviews were implemented to explore how AR assist students in an inquiry.

ITAI was an instrument for evaluating science inquiry-based tasks in science. The researchers concluded four essential functions that inquiry-based tasks should serve are defined: (1) assisting in the construction of understandings about scientific concepts, (2) providing students opportunities to use inquiry process skills, (3) being conducive to establishing understandings about scientific inquiry, and (4) giving students opportunities to develop higher order thinking skills. ITAI was developed to judge whether inquiry-based tasks perform these functions well. By analyzing 53 inquiry-based tasks in the biology textbooks in Mainland China, this instrument showed (1) the inter-rater reliability reached 87.7%, (2) the grading criteria have high discriminant validity, (3) the items possess high convergent validity, and (4) the Cronbach's alpha reliability coefficient reached 0.792.(Yang & Liu, 2016a)

ITAI contains 22 items in 3 dimensions (Yang & Liu, 2016b), which are shown in Table 1 below.

Table 1 items of scale of the inquiry-based tasks analysis inventory

Dimensions	Items
Dimension 1: To assist in the construction of understandings about scientific concepts	1. Scientific concepts involved in this task are consistent with the objectives of the lesson
	2. Understandings about the involved concepts contribute to learning core ideas
Dimension 2: in this task, students are expected to use the following skills	3. Observing
	4. Inferring
	5. Measuring
	6. Communicating
	7. Classifying
	8. Predicting
	9. Controlling variables

	10. Defining operationally
	11. Formulating hypotheses
	12. Interpreting data
	13. Asking questions
	14. Formulating models
Dimension 3: The text of this task reflects the following understandings about scientific inquiry	15. Scientific inquiry all begin with a question, but do not necessarily test a hypothesis
	16. There is no single set and sequence of steps or methods followed in all inquiries
	17. Inquiry procedures are guided by the question asked
	18. All scientists performing the same procedures may not get the same results
	19. Inquiry procedures can influence results
	20. Conclusions must be consistent with the data collected
	21. Scientific data are not the same as scientific evidence
	22. Explanations are developed from a combination of collected data and what is already known

Semi-structured interviews were used to examine if and how AR changed students' learning in the teacher's view. The outline of the interviews is shown below.

1) What do you know about AR and what characteristics do you think it has?
2) What functions does AR play in classroom activities?
3) If AR can't be used, how will you manage this class?
4) In what activities in the class is AR helpful to students?
5) How AR assist students in the activities?
6) What preparation should teachers do before using AR in class?
7) What should teachers do when students using AR in class?
8) What effects will the use of AR in class have on the growth of students?
9) Do you have any suggestions for teachers preparing to use AR in class?

3.4. AR Application Design

In this study, the application, called *Secrets of Rainbow*, containing three main scenes is designed. It could run on Android devices with cameras and gyroscopes. This application was developed based on the Unity 3D engine and Vuforia SDK.

Secrets of Rainbow contains three main scenes: (1) Find Rainbow; (2) Time for Rainbow; and (3) Watch Rainbow Together. These scenes are designed and implemented to make inquiry activities in class more vivid and interactive.

1) Find Rainbow

Users can observe views before a rain, during a rain, and after a rain around by lifting the device to different directions with the gyroscope. There are four buttons at the bottom left of the *screen*, *clouds*,

rain, go to watch rainbow and *once again*, which are clicked to change the virtual views presented. The main elements in this scene include clouds, raindrops, rainbow and setting sun. This scene shows the conditions for the rainbow to appear: (1) after a rain, (2) water vapour in the air and (3) setting sun.

2) Time for Rainbow

Users can explore the best time to watch a rainbow in this scene. By capturing a special card with the camera, the white little man, the sun and rainbow will be presented. Sliding on the scrollbar at the bottom can change the time and cause a change in the position of the sun and rainbow. Buildings will appear or disappear when the city button is clicked. The top right corner of the screen is the perspective of the little man, which can be changed by colliding and rotating the little man. This scene mainly shows the connection between the sun and the rainbow in position, implying the time of day when the rainbow can be seen.

3) Watch Rainbow Together

Users can explore the best location to watch a rainbow in this scene. By capturing two special cards with the camera, the white little man and the yellow little man with the water drop and the rainbow in their each perspective will be presented as shown in Figure 2. Moving one of the cards can change the yellow man's position and cause the position and size's changes of his rainbow. This scene mainly shows the location where the rainbow can be seen, implying why at some places we can see the rainbow and at some places we can't.

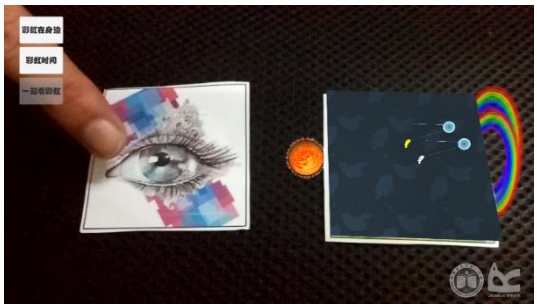

Figure 2 the application guides students explore location to watch rainbow

3.5. Instructional Design

In this study, a science lesson for fifth-grade students, also named "Secrets of Rainbow", containing some learning activities with mobile-based AR applications were designed. This lesson would be implemented after students learned the reflection, refraction, and dispersion of light as a unit supplement lesson.

The basic goal of this lesson is to understand the conditions of the rainbow and the rainbow is always in the opposite direction of the sun. Inquiry activities were carried out to help students construct this knowledge by themselves, during which students needed to observe the views, raise their interesting questions, verify their hypothesis through the combination of a virtual and real environment. These inquiry activities are the core of this lesson and the reason for using AR technology. Rainbow is a charming meteorological landscape that requires special conditions to form that most of the students are interested in, and it can hardly be controlled by humans. The use of AR offers visible variables for the students to change and presents the corresponding phenomenon, which helps students know the principles about the rainbow and inspire them to take a closer look in real life if that happens.

In this lesson, every two students would have a tablet, so they could learn with the AR application together. Pairs of students should cooperate in integrating with cards and application, analyzing what they observe, and recording their findings on the list given by the teacher.

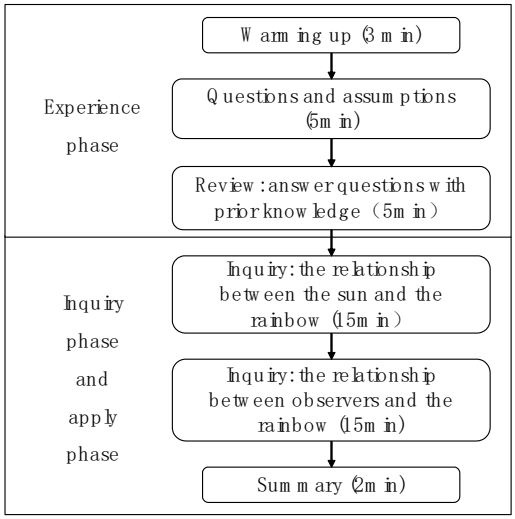

Figure 3 structure of the lesson

The basic structure of this lesson is shown in Figure 3. The mobile-based AR application is used in warming up and two inquiry activities. The first 3 minutes of the lesson is used in warming up, in that step teachers present pictures of the rainbow as well as lead students to use AR application experience the form of a rainbow and observe rainbow views as shown in Figure 4. In the next five minutes, students shared their findings in the AR observation and raise questions about rainbow according to their finding under the teacher's guide. After that, they asked questions based on their prior knowledge. Students solved why there are seven colours in the rainbow and why the colours of the rainbow always presented from red to purple. Then, they wanted to explore when and where to watch the rainbow through inquiry activities.

Figure 4 students were looking for rainbow with AR

There are four steps in each of the inquiry activities as shown in Figure 5. The teacher would give a question students raised in step 2 and offer several different choices. After students choosing one, the whiteboard system would present the statistics on the number of people selected for every option. Then the teacher introduced the corresponding AR application scene to students and assist them to make the inquiry plan.

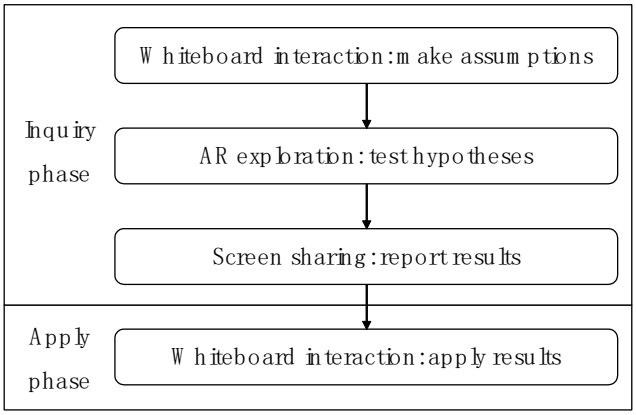

Figure 5 structure of the inquiry activities

Exploration with AR application was the core of each inquiry activity. Students needed to observe, guess and discuss independently and reach agreement in groups as shown in Figure 6. Nearly 6 minutes later, a pair of students would be asked to share their inquiry process and results through the link between their tablet and the whiteboard in the classroom. Other students and the teacher would discuss their results and conclude the rules after their presentation. When students determined their conclusion, the teacher would list several situational questions for students and help them to understand and apply the conclusions.

Figure 6 students were exploring best time to observe rainbow

At the end of this class, the teacher led students to recall what they had learned in this class and inspired them to explore more about the relevant phenomenon in real life.

4. Results

Two observers evaluated the class based on ITAI, and an interview with the teacher was conducted after we got the observation results to collect the teacher's thoughts about the integration of AR and teaching.

4.1 Results of observation

The two observers judged every item according to the content and guidance of ITAI, and there are 15 abilities they both agree involved in this lesson as shown in Table 2.

Table 2 the unanimous items of observers

Dimension	Items
Dimension 1: To assist in the construction of understandings about scientific concepts	1. Scientific concepts involved in this task are consistent with the objectives of the lesson
	2. Understandings about the involved concepts contribute to learning core ideas
	3. Observing
	4. Communicating

Dimension 2: in this task, students are expected to use the following skills	5. Predicting
	6. Controlling variables
	7. Formulating hypotheses
	8. Asking questions
	9. Formulating models
Dimension 3: this task reflects the following understandings about scientific inquiry	10. Scientific inquiry all begin with a question, but do not necessarily test a hypothesis
	11. Inquiry procedures are guided by the question asked
	12. All scientists performing the same procedures may not get the same results
	13. Inquiry procedures can influence results
	14. Scientific data are not the same as scientific evidence
	15. Explanations are developed from a combination of collected data and what is already known

In the dimension of construction of understandings about scientific concepts, both of the observers agreed that the concepts referred to in the objectives of this lesson were the conclusions of these inquiry tasks, and these concepts are components of core ideas described in the national standards. The directions of light propagations and the compositions of light are the concepts students required to manage during 5 to 6 grades in China's primary school. And this lesson containing the inquiry activities were carried out to assist students to construct these concepts based on examples from real life.

In the dimension of scientific skills, observing, communicating, predicting, controlling variables, formulating hypotheses, asking questions and formulating models are 7 skills that were considered in this lesson by observers. Students were required to observe in the virtual and reality combined environment, communicate with their pair to cooperate, predict by choosing answers on the whiteboard, control variables in inquiry where to watch the rainbow, formulate hypotheses before the operation with AR application, ask research questions and formulate models about the form of a rainbow. One of the observers thought classifying also exist in this lesson, for students needed to distinguish among different phenomenon. But the other observer thought there was no clear classification.

In the dimension of understandings about scientific inquiry, both of the observers believed this lesson was helpful for students to acquire deeper understandings about the science inquiry process. The ignorance in this lesson was about concluding based on data collected. Observers guessed it was because the lesson aimed to apply some knowledge in explaining real situations, so this lesson focused on observing and assuming more.

4.2. Results of teacher interview

In the interview with the teacher, questions mainly focused on why teacher choose to use AR in this lesson and how AR assist students in dimensions of ITAI. The teacher proposed to use AR to explore the rainbow and participated in the design of the application. And the teacher was also one of the instructional designers of this lesson.

The teacher thought that the advantage of AR in teaching or learning lied in its ability to promote students' intuitive feelings through the interaction with the combination of virtual objects and real

environment. Using AR to present rainbow, which was an interesting mystery in students' opinion, could make students feel pleased and positive and let them connect knowledge with interesting life phenomenon.

As for skills in inquiry, the teacher claimed that AR has a strong ability to express the situations, which was able to highlight the important variables and their features in the phenomenon so that students could pay attention to the connection between variables they have not noticed in real life. And the well-designed AR application helped organize the whole inquiry process in observation, hypothesis, exploration, and conclusion. Otherwise, AR was good at controlling variables for it simplifies the complex phenomenon to prominent the objects related to the lesson's basic goals. Most importantly, the use of AR also helped students develop the ability of autonomous learning.

In the group task in this lesson, the teacher explained that pair works were regular in science class to help students' expression, communication, and construction. Students in a pair could learn from each other and share the pressure of the task.

To use AR well in class, teachers needed to do more preparation and change their roles in class. Before class, teachers should integrate AR in the teaching process well to avoid using technology for its own sake. And in class, teachers' work was to assist students, helping promote the process of activities, test students' learning results, and inspire students to explore independently. Although there were more efforts, students' performances would bring teachers a high sense of achievement.

5. Discussion and conclusion

In this study, an AR application was specially designed and implemented to create a virtual-reality combined environment for students taking an optical inquiry task about the rainbow in grade 5. Moreover, a mixed methods research approach was used to test the contextual learning approach based on AR. The experimental results revealed that using AR in this lesson can assist in the construction of understandings about scientific concepts, provide students opportunities to use inquiry process skills, and develop students' higher order thinking skills. Furthermore, by interviewing the teacher, we found AR plays complex roles in inquiry activities and a matched instructional approach is necessary for ensuring the integration between AR and learning.

In this study, the contextual learning approach was the core of the learning process, by which the environment created by AR inspires students' observation, exploration, and expression successfully. In the experience phase of this lesson, students were touched by the formation and beauty of the rainbow, when they extracted the objects and their features related to the rainbow. Then their deep feelings engaged them to raise more questions and make hypothesises. The vivid presentation based on AR is indeed able to arouse students' interests and promote them to construct knowledge (Takahashi et al., 2013; H. T. Zimmerman et al., 2016). In the inquiry phase, AR application was used to help come to a consistent conclusion, when the teacher asked one group of students showed their exploration and shared their results after each exploration activity. As Yoon and Wang (2014) once discovered, AR could promote more expressions and consistency in collaboration. In the apply phase, explaining other cases in life with AR application promoted concept understandings and knowledge model constructions. The probable reason is that coordinating images in AR with actual samples enhanced students' understanding of concepts(Heather Toomey Zimmerman et al., 2015).

It has been clear that AR has the potential to create abundant learning environments, and the contextual learning approach has played a vital role in integrating AR with inquiry activities properly. In the future, how to use AR properly in teaching and learning deserves more continuous attention.

6. Acknowledgement

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7 References

Asai, K., Sugimoto, Y., & Billinghurst, M. (2010). *Exhibition of lunar surface navigation system facilitating collaboration between children and parents in Science Museum.* Paper presented at the Proceedings - VRCAI 2010, ACM SIGGRAPH Conference on Virtual-Reality Continuum and Its Application to Industry.

Azuma, R., Baillot, Y., Behringer, R., Feiner, S., Julier, S., & Macintyre, B. (2001). Recent advances in augmented reality. *Computer Graphics and Applications, IEEE, 21*(6), 34-47. doi:10.1109/38.963459

Bruns, E., Brombach, B., Zeidler, T., & Bimber, O. (2007). Enabling Mobile Phones To Support Large-Scale Museum Guidance. *MultiMedia, IEEE, 14*(2). doi:10.1109/MMUL.2007.33

Bybee, R. W. (2014). The BSCS 5E instructional model: Personal reflections and contemporary implications.(Guest Editorial). *Science and Children, 51*(8), 10.

Carmigniani, J. (2011). Augmented reality technologies, systems and applications. *Multimedia tools and applications, 51*(1), 341-377.

Chang, S.-C., & Hwang, G.-J. (2018). Impacts of an augmented reality-based flipped learning guiding approach on students' scientific project performance and perceptions. *Computers & Education, 125*, 226-239. doi:10.1016/j.compedu.2018.06.007

Chen, C. H., Chou, Y. Y., & Huang, C. Y. (2016). An Augmented-Reality-Based Concept Map to Support Mobile Learning for Science. *Asia-Pacific Education Researcher, 25*(4), 567-578. doi:10.1007/s40299-016-0284-3

Dunleavy, M., Dede, C., & Mitchell, R. (2009). Affordances and Limitations of Immersive Participatory Augmented Reality Simulations for Teaching and Learning. *Journal of Science Education and Technology, 18*(1), 7-22. doi:10.1007/s10956-008-9119-1

Falk, J. H., & Dierking, L. D. (2000). Learning from museums: visitor experiences and the making of meaning. In (Vol. 15). Portland: Ringgold Inc.

Kusmayadi, T. A., Riyadi, Kartikaningtyas, V., & Kusmayadi, T. A. (2017). Contextual Approach with Guided Discovery Learning and Brain Based Learning in Geometry Learning. *Journal of Physics: Conference Series, 895*. doi:10.1088/1742-6596/895/1/012024

Liu, Y., & Wang, Y. (2009). AR-View: An augmented reality device for digital reconstruction of Yuangmingyuan. In (pp. 3-7).

Miyashita, T., Meier, P., Tachikawa, T., Orlic, S., Eble, T., Scholz, V., . . . Lieberknecht, S. (2008). An Augmented Reality museum guide. In (pp. 103-106).

NASA. (2008). 5Es Overview: "The 5E instructional model". Retrieved from http://www.nasa.gov/audience/foreducators/nasaeclips/5eteachingmodels/index.html

Rt, A. (1997). A survey of augmented reality. *Presence, 6*(4), 355-385.

Takahashi, T. B., Takahashi, S., Kusunoki, F., Terano, T., & Inagaki, S. (2013). Making a Hands-On Display with Augmented Reality Work at a Science Museum. In (pp. 385-390).

Wernhuar, T., Yu-Sheng, L., Chiu-Pin, L., & Kuo-Liang, O. (2016). Development of a Lunar-Phase Observation System Based on Augmented Reality and Mobile Learning Technologies. *Mobile Information Systems, 2016*. doi:10.1155/2016/8352791

Wu, P.-H., Hwang, G.-J., Yang, M.-L., & Chen, C.-H. (2018). Impacts of integrating the repertory grid into an augmented reality-based learning design on students' learning achievements, cognitive load and degree of satisfaction. *Interactive Learning Environments, 26*(2), 221-234. doi:10.1080/10494820.2017.1294608

Yang, W., & Liu, E. (2016a). Development and Validation of an Instrument for Evaluating Inquiry-Based Tasks in Science Textbooks. *International Journal of Science Education, 38*(18), 2688-2711. doi:10.1080/09500693.2016.1258499

Yang, W., & Liu, E. (2016b). Scale of the Inquiry-based Tasks Analysis Inventory. *PsycTESTS*. doi:10.1037/t64864-000

Yoon, S. A., & Wang, J. (2014). Making the Invisible Visible in Science Museums through Augmented Reality Devices. *TechTrends: Linking Research and Practice to Improve Learning, 58*(1), 49-55. doi:10.1007/s11528-013-0720-7

Zimmerman, H. T., Land, S. M., & Jung, Y. J. (2016). Using augmented reality to support children's situational interest and science learning during context-sensitive informal mobile learning. *Advances in Intelligent Systems and Computing, 406*, 101-119. doi:10.1007/978-3-319-26518-6_4

Zimmerman, H. T., Land, S. M., McClain, L. R., Mohney, M. R., Choi, G. W., & Salman, F. H. (2015). "Tree Investigators": Supporting Families' Scientific Talk in an Arboretum with Mobile Computers. *International Journal of Science Education, Part B: Communication and Public Engagement, 5*(1), 44-67. doi:10.1080/21548455.2013.832437

Does sharing leadership actually work? An evaluation of the benefits and drawbacks of shared leadership

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Abstract

Shared leadership is being utilized in increasing measures across a spectrum of organizations. It appears to afford numerous advantages within the context of the evolving modern workforce. Most of the studies on shared leadership have focused on its benefits, but few have considered potential weaknesses. This research sought to ascertain whether the benefits that have been correlated with this leadership model are valid and what drawbacks and limitations might be associated with it. This was accomplished by surveying prominent leaders from several faith-based organizations in the United States that utilize shared leadership. Thirteen leaders from 7 organizations were interviewed. An emergent design and a qualitative approach were employed, along with a purposive sampling technique. A descriptive approach based on semi-structured interviews was adopted to help elucidate the benefits and drawbacks these groups encountered. Ten benefits that were found in the academic literature had also been observed in the organizations surveyed. These included exceptional outcomes, enhanced decision-making, complex problem solving, creative innovation, team-member fit, team synergy, organizational vitality, healthy organizational culture, individual wellbeing, and sustained growth. Five drawbacks were also discovered. These included the difficulty of the model, a potential lack of follow-through, a possible lack of efficiency, a general lack of acceptance of the model, and the danger of immature or usurping team members. The description of these five limitations is a novel contribution to this field of inquiry.

Keywords: Leadership, Shared leadership, Collaborative decision-making, Team leadership, Decentralized leadership.

1. Introduction

There has been significant interest in the topic of shared leadership in recent years. A growing body of research has accompanied this (Barnett & Weidenfeller, 2016). Much of the research on shared leadership has noted its benefits. The accompanying literature review will provide a sampling of that material. Potential drawbacks associated with the model have received far less attention. This study was designed to evaluate both benefits and limitations.

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2. Literature Review

Shared leadership can be defined as distributed leadership on a team (Carson, Tesluk, & Marrone, 2007; Ensley, Hmieleski, & Pearce, 2006; Pearce & Sims, 2002) and collective influence within a team (Sivasubramaniam, Murry, Avolio, & Jung, 2002). It "entails a simultaneous, ongoing, mutual influence process within a team" (Pearce, 2004, p. 48). This paper will use the term shared leadership in a general way that refers to the distribution of leadership and influence on a team rather than a specific organizational structure.

There has been an emerging trend away from the top-down leadership models of the past and towards collective approaches (Friedrich, Griffith, & Mumford, 2016). Serban and Roberts (2016) note, "Leadership research, traditionally focused on the behavior of an appointed/elected leader, is rapidly shifting towards a distributed, group process form of leadership known as 'shared leadership'" (p. 181). The focus on shared forms of leadership has been increasing steadily (Friedrich et al., 2016).

Many benefits with this model have been observed and were previously categorized under the following ten groupings (Herbst, 2017). These include exceptional outcomes, enhanced decision-making, complex problem solving, creative innovation, team-member fit, team synergy, organizational vitality, healthy organizational culture, individual wellbeing, and sustained growth.

Shared leadership has been associated with exceptional outcomes, such as team success (Shipper, Manz, Nobles, & Manz, 2014), improvements in performance (Carson et al., 2007; Daspit, Ramachandran, & D'Souza, 2014; D'Innocenzo, Mathieu, & Kukenberger, 2014; Sivasubramaniam et al., 2002), motivational and cognitive advantages (Solansky, 2008), leadership behavior and efficiency (Bergman, Rentsch, Small, Davenport, & Bergman, 2012), effectiveness (Daspit, Tillman, Boyd, & Mckee, 2013; Haward, Amir, Borrill, Dawson, Scully, West, & Sainsbury, 2003; Hiller, Day, & Vance, 2006; Wang et al., 2014), proactivity and productivity (Erkutlu, 2012; Olivia & Shao, 1996), quality and service (Olivia & Shao, 1996; Manz, Skaggs, Pearce, & Wassenaar, 2015; Perry, 2000), and exponential growth (Hesselbein & Goldsmith, 2009). These benefits are more frequently observed in knowledge and information related work (Fausing, Jeppesen, Jønsson, Lewandowski, & Bligh, 2013).

Enhanced decision-making can be another benefit of shared leadership. Distributed decision-making can be advantageous (Petrovia & Hristov, 2016). Information and knowledge sharing can help teams make better decisions (Brodbeck, Kerschreiter, Mojisch, & Schulz-Hardt, 2007; Supovitz & Tognatta, 2013). While increased bureaucracy will often impair decision-making, empowering team-members may cultivate positive change and advancement (Hamel & Zanini, 2017). The benefits of collaborative decision-making require information sharing (Panahifar, Heavey, Byrne, & Fazlollahtabar, 2015) and a diversity of team members that are proficient in communication (Deng, Lin, Zhao, & Wang, 2015). A team's ability to share, evaluate, and process information has been reported as a critical factor affecting the quality of collaborative decision-making (McLeod, 2013).

Complex problem solving is another advantage associated with shared leadership. While the benefit is related to decision-making, it also entails information sharing. Problem-solving in complex and challenging situations requires knowledge sharing, a key feature of shared leadership (Clarke, 2012; Han, Lee, Beyerlein, & Kolb, 2018). Knowledge sharing is related to creative problem solving (Carmeli, Gelbard, & Reiter-Palmon, 2013). Wang, Waldman, & Zhen (2014) write, "the effects of shared leadership are stronger when the work of team members is more complex" (p. 181). When decisions must be made regarding the use of limited resources, "egalitarian" teams have functioned

better than hierarchical teams, with reduced conflict and greater team unity (van Bunderen, Greer, & van Knippenberg, 2018).

Creative innovation has also been associated with shared leadership (Nurmi, 1996). Shared leadership can lead to increases in creativity (Pearce, 2007; Pearce & Conger, 2003; Mohammed & Thomas, 2014; Oswald, 2018) and a "high level of administrative creativity" (Alanezi, 2016, p. 50). Hierarchical constraints can limit information sharing, creativity, and innovation, while teams that collaborate in relational ways can thrive (Tzabbar & Vestal, 2015). Information sharing can lead to significant increases in creativity (Lee, Lee, & Seo, 2011; Lee, Lee, Seo, & Choi, 2015). Shared leadership also fosters innovation (Bligh, Pearce, & Kohles, 2006; Shipper et al., 2014; Hoch, 2013), and it can even do so in a way that increases with task complexity (Hui-ying & Jian-peng, 2013). As with previous benefits, information sharing is instrumental to experiencing these benefits of shared leadership (Jiang, Gu, & Wang, 2015).

Team-member fit, a term that describes a team member's satisfaction, involvement, and commitment levels, is another outcome of shared leadership. Job satisfaction has been related to shared leadership (Hansen & Høst, 2012; Steinert, Goebel, & Rieger, 2006; Woods & Weasmer, 2002). That can lead to ownership, participation, and involvement (Bamford-Wade & Moss, 2010; Moe, Dingsøyr, & Kvangardsnes, 2009). The benefits mentioned above can engender team-member commitment (Devos, Tuytens, & Hulpia, 2014; Lee-Davies et al., 2007) and retention (Kleinman, 2004).

Shared leadership can also improve team synergy (Somboonpakorn & Kantabutra, 2014) and has been associated with increased team performance (Carson et al., 2007) and effectiveness (Wang et al., 2014). Teams experience this as a consequence of increased trust (Drescher, Welpe, Korsgaard, Picot, & Wigand, 2014). Shared leadership also fosters team coherence (Mathieu, Kukenberger, D'Innocenzo, & Reilly, 2015) and can improve team accountability (Bamford-Wade & Moss, 2010).

Organizational vitality is also related to shared leadership. Shared leadership helps organizations utilize their team members' strengths, abilities, and leadership potential (Miles & Watkins, 2007). Distributing leadership can also help them make the best use of all the talent that exists across their staff (Lee-Davies, Kakabadse, & Kakabadse, 2007). This can be better achieved on shared leadership teams since these teams distribute the expertise needed for organizational success across a broader array of qualified leaders (Spillane, Halverson, & Diamond, 2004).

Organizational culture is something that evolves from the leadership of an organization (Schein, 2009). Shared leadership, like any other type of leadership model, has the potential to uniquely impact the organizational culture in which it operates. Indeed, this leadership model is related to knowledge sharing cultures (Taylor, 2013), and cultures of inquiry and collegiality in school settings (Khourey-Bowers, Dinko, Hart, 2005). Shared leadership can also foster cultures of organizational adaptability (Laloux, 2014). Adaptable cultures can also accommodate positive organizational change, something evident in shared leadership (Park & Kwon, 2013). Shared leadership can also help facilitate organizational sustainability (Pearce et al., 2013).

Individual wellbeing has also been associated with shared leadership. As previously noted, shared leadership can improve job satisfaction, participation, involvement, commitment, and retention. One study even found that it can lead to reduced role confusion, role overload, role conflict, and job stress (Wood & Fields, 2007). Shared leadership can also lead to fitness benefits, healthful regeneration, increased engagement, and stress management (Lovelace, Manz, & Alves, 2007).

Sustained growth is another benefit of shared leadership. Pearce, Manz, and Akanno (2013) surmised, "decentralized, shared leadership was a better predictor of firm growth rates than centralized, vertical leadership" (p. 250). Malburg (1997) described "explosive growth" as a typical

feature of "flat organizational structures" (p. 67). David Thompson explained that sharing leadership between co-directors with different but complementary strengths was a common feature of billion-dollar enterprises (as cited in Hesselbein & Goldsmith, 2009). Marcus Buckingham (2005) has also noted how this has been typical in many successful technology companies (p. 274).

3. Theoretical Framework

Although the academic literature on this topic was full of research that supported the benefits of shared leadership, there was a conspicuous absence of research on its drawbacks. This project attempted to investigate the benefits mentioned above and probe for possible limitations.

4. Methodology

This qualitative investigation employed a descriptive approach, which utilized semi-structured interviews. This allowed for a better understanding of the antecedents and outcomes of shared leadership in Christian organizations, a sector that has not received adequate attention in this field. Shared leadership is a model of leadership that can be found in the Christian New Testament (Hellerman, 2013; Strauch, 2003). A significant number of Christian churches and organizations are embracing this type of leadership, but there have only been a small number of studies on shared leadership in this arena. There has also been minimal research concerning the drawbacks of shared leadership. For these reasons, the focus of this research was centered on Christian ministries utilizing shared leadership. A strategy of emergent design was employed. Purposive sampling led to the selection of 13 leaders from seven evangelical organizations in the United States that utilize shared leadership. The participants' data have been kept anonymous to minimize bias and ensure accuracy. The following four questions provided the foundation for the semi-structured interviews.

Question 1: Which benefits associated with shared leadership have you observed in your organization?

Question 2: What impact has shared leadership had on your organization (include quantifiable outcomes like innovative solutions, organizational growth, etc., and climate outcomes like work environment, relationships, etc.)?

Question 3: What impact has shared leadership had on you (personal growth, job satisfaction, organizational commitment, motivation, etc.)?

Question 4: What negative outcomes associated with shared leadership have you observed in your organization?

5. Data Analysis

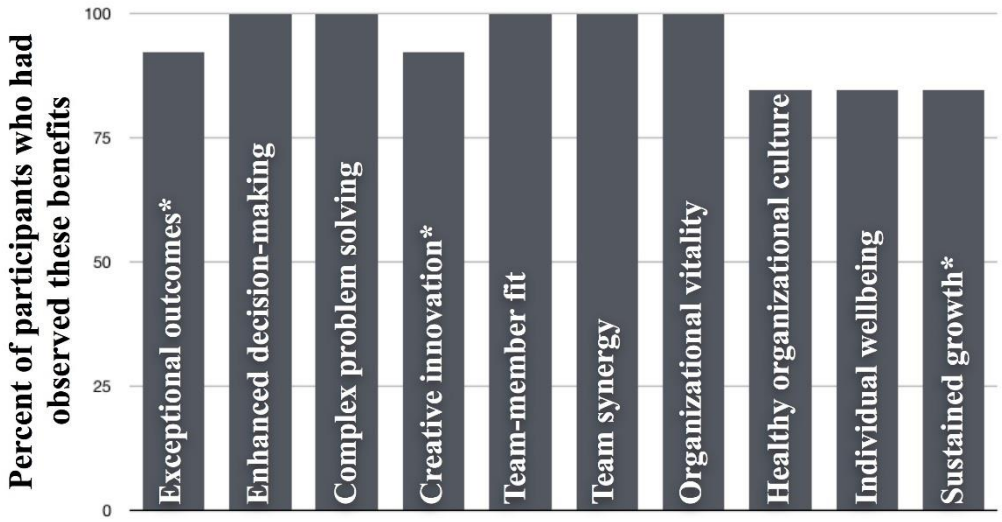
Three interviews were conducted in person, and ten were administered by phone. All interviews were consensually recorded. Transcription was done with Trint software. Analysis was completed with MaxQDA-12 qualitative data analysis software.

6. Results of the Study

All of the participants had observed enhanced decision-making, complex problem solving, team-member fit, team synergy, and organizational vitality. A total of 92.3% of the leaders surveyed affirmed their experience of exceptional outcomes. Two respondents mentioned that this was true, but that the term "exceptional outcomes" could be interpreted in different ways. Similarly, 92.3% of the participants reported creative innovation, with one respondent mentioning that the term could be

interpreted in different ways as well. A total of 84.6% of the participants had observed healthy organizational culture, individual wellbeing, and sustained growth. Concerning sustained growth, 4 leaders were careful to mention that growth could be interpreted in different ways. Some of those surveyed experienced numerical growth while others perceived this benefit in other legitimate capacities. Table 1 below provides a summary of these data.

Table 1 - Benefits of shared leadership



* Denotes that the benefit had been observed but with clarification about what that entailed.

The potential drawbacks of shared leadership also needed to be considered, since there has been far less attention given to these in the academic literature. The leaders interviewed were queried on this subject as well. In this case, five potential drawbacks surfaced. These included the difficulty of the model, a potential lack of follow-through, a possible lack of efficiency, a general lack of acceptance of the model, and the danger of immature or usurping team members. More attention will be given to each below.

One drawback that became evident was the inherent difficulty of the shared leadership model. One of the respondents stated that sharing leadership is the hardest way to do leadership but clarified that it is also the best way to do leadership. Another participant explained the difficulty his team had experienced in learning how to lead collaboratively. The structure that had evolved on their team was somewhat complex and had not come easy to them. Although these leaders believed in the model and had experienced success with it, they were also aware that making shared leadership work took time and effort.

Another problem some of those interviewed had encountered was the possibility for a lack of follow-through. One leader described this weakness, calling it an "organizational sand trap." He added, "In every form of governance there is going to be weaknesses. In this one, it can be easy to hide behind one another, procrastinate." He noted the need for accountability. Many agreed with that conclusion. One articulated that this way, "Absent of a real written, mutually agreed upon accountability culture, there is a great possibility that because everyone owns something nobody owns it and nothing gets done." Several participants shared similar concerns and emphasized the importance of accountability.

Another drawback that was reported was the potential for a lack of efficiency. One leader summarized this risk admitting that his team had at times gone "round and round on certain things" in a way that

could be described as "anti-productive." Although many of those surveyed realized the risk of a lack of efficiency, they also noted that efficiency was not always the only consideration. In the context of education, Williamson and Blackburn (2019) noted, "When it comes to time, leaders have to weigh the slower decision process against the benefits that come from setting aside time for discussion and analysis of alternatives" (Williamson & Blackburn, 2019, pp. 22-23).

Another difficulty that surfaced was the general lack of acceptance of the model, in the public and even among followers. Some of those surveyed pointed to the status quo of hierarchy and top-down leadership, and the way these traditional styles had conditioned people to think about leadership. Many people, familiar only with a hierarchal approach, can have a hard time accepting a shared model. Concerning shared leadership, one leader noted that some people "just cannot embrace it. It is too much for them. It is just too foreign for them. It does not make sense to them. It is a culture clash." Another agreed, saying that for most people, "This is a very foreign kind of thing." Related to this general lack of acceptance is the finding that those with existing high distinctions within an organization tend to be the most resistant to adapting to shared leadership models. This was corroborated in a study of physicians within the Veterans Health Administration (Stewart, Astrove, Reeves, Crawford, & Solimeo, 2017).

A final risk that several participants noted with this model is the danger of immature or usurping team members. This drawback surfaced more than any other. This risk is also one that had been hinted at in the academic literature. Timperley (2005) warned of the danger of a "distribution of incompetence" in shared leadership (p. 417). One leader described this pitfall stating, "It is important not to have divisive people in there, though because divisive people can ruin the whole party really quickly." Another added, "I suppose it could be a disaster if you got a bunch of people on the board that just want to argue with each other." The leaders that highlighted this risk were adamant that teams had to get to a place of maturity, trust, and relational strength to be able to circumvent this obstacle.

7. Conclusions

The present study classified many of the benefits of shared leadership that have been found in the academic literature under ten specific categories. These included exceptional outcomes, enhanced decision-making, complex problem solving, creative innovation, team-member fit, team synergy, organizational vitality, healthy organizational culture, individual wellbeing, and sustained growth. The leaders interviewed in this investigation affirmed these outcomes in their organizations. These same leaders also highlighted five potential drawbacks. These included the difficulty of the model, a potential lack of follow-through, a possible lack of efficiency, a general lack of acceptance of the model, and the danger of immature or usurping team members.

Future research should further investigate the five drawbacks this study uncovered. It would also be essential to expand on this investigation by considering other potential pitfalls to this model of leadership. This survey only interviewed leaders from shared leadership teams that were committed to this model and experiencing success with it. Future research might investigate attributes that have led to the failure of teams utilizing this model that did not succeed.

This investigation confirmed many of the benefits that have previously been associated with shared leadership. It also uncovered five potential drawbacks. It seems evident that experiencing the positive outcomes of shared leadership requires the ability to navigate past its drawbacks. Shared leadership really does work but, like most things, it works best when done correctly.

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9. References

Alanezi, A. (2016). The relationship between shared leadership and administrative creativity in Kuwaiti schools. *Management in Education, 30* (2), 50-56.

Bamford-Wade, A., & Moss, C. (2010). Transformational leadership and shared governance: An action study. *Journal of Nursing Management, 18* (7), 816-822.

Barnett, R., C., & Weidenfeller, N., K. (2016). Shared leadership and team performance. *Advances in Developing Human Resources, 18* (3), 334-351.

Bergman, J., Z., Rentsch, J., R., Small, E., E., Davenport, S., W., & Bergman, S., M. (2012). The shared leadership process in decision-making teams. *The Journal of Social Psychology, 125 (1),* 17–42.

Bligh, M., C., Pearce, C., L., & Kohles, J., C. (2006). The importance of self and shared leadership in team based knowledge work: A meso-level model of leadership dynamics. *Journal of Managerial Psychology, 21* (4), 296-318.

Brodbeck, F., C., Kerschreiter, R., Mojisch, A., & Schulz-Hardt, S. (2007). Group decision making under conditions of distribute knowledge: The information asymmetries model. *Academy of Management Review, 32 (2),* 459-479.

Buckingham, M. (2005). *The one thing you need to know: ... About great managing, great leading, and sustained individual success*. New York, New York: Free Press.

Carmeli, A., Gelbard, R., & Reiter-Palmon, R. (2013). Leadership, creative problem-solving capacity, and creative performance: The importance of knowledge sharing. *Human Resource Management, 52* (1), 95-121.

Carson, J. B., Tesluk, P. E., & Marrone, J. A. (2007). Shared leadership in teams: An investigation of antecedent conditions and performance. *Academy of Management Journal, 50 (5),* 1217-1234.

Clarke, N. (2012). Shared leadership in projects: A matter of substance over style. *Team Performance Management, 18* (3/4), 196-209.

Daspit, J., J., Ramachandran, I., & D'Souza, D., E. (2014). TMT shared leadership and firm performance: Investigating the mediating role of absorptive capacity. *Journal of Managerial Issues, 26* (3), 219-239.

Daspit, J., Tillman, C., J., Boyd, N., G., & McKee, V. (2013). Cross-functional team effectiveness. *Team Performance Management, 19* (1/2), 34-56.

Deng, Z., Lin, Y., Zhao, M., & Wang, S. (2015). Collaborative planning in the new media age: The Dafo Temple controversy, China. *Cities, 45,* 41-50.

Devos, G., Tuytens, M., & Hulpia H. (2014). Teachers' organizational commitment: Examining the mediating effects of distributed leadership. *American Journal of Education, 120 (2),* 205-231.

D'Innocenzo, L., Mathieu, J., E., & Kukenberger, M., R. (2014). A Meta-Analysis of Different Forms of Shared Leadership–Team Performance Relations. *Journal of Management, 20* (10), 1-28.

Drescher, M., A., Welpe, I., M., Korsgaard, M., A., Picot, A., & Wigand, R., T. (2014). The dynamics of shared leadership: Building trust and enhancing performance. *Journal of Applied Psychology, 99 (5),* 771-783.

Ensley, M. D., Hmieleski, K. M., & Pearce, C. L. (2006). The importance of vertical and shared leadership within new venture top management teams: Implications for the performance of startups. *Leadership Quarterly, 17 (3),* 217-231.

Erkutlu, H. (2012). The impact of organizational culture on the relationship between shared leadership and team proactivity. *Team Performance Management, 18* (1/2), 102-119.

Fausing, S., M., Jeppesen, J., H., Jønsson, S., T., Lewandowski, J., & Bligh, C., M. (2013). Moderators of shared leadership: Work function and team autonomy. *Team Performance Management, 19* (5/6), 244-262.

Friedrich, T., L., Griffith, J., A., & Mumford, M., D. (2016). Collective leadership behaviors: Evaluating the leader, team network, and problem situation characteristics that influence their use. *Leadership Quarterly, 27* (2), 312-333.

Hamel, G., & Zanini, M. (2017). What We Learned About Bureaucracy from 7,000 HBR Readers. *Harvard Business Review Digital Articles*, 2–8.

Han, S. J., Lee, Y., Beyerlein, M., & Kolb, J. (2018). Shared leadership in teams. *Team Performance Management*, 24(3/4), 150–168.

Hansen, J., R., & Høst, V. (2012). Understanding the relationships between decentralized organizational decision structure, job context, and job satisfaction—A survey of Danish public managers. *Review of Public Personnel Administration, 32 (3),* 288-308.

Haward, R., Amir, Z., Borrill, C., Dawson, J., Scully, J., West, M., & Sainsbury, R. (2003). Breast cancer teams: The impact of constitution, new cancer workload, and methods of operation on their effectiveness. *British Journal of Cancer, 89 (1),* 15-22.

Hellerman, J. (2013). *Embracing Shared Ministry: Power and Status in the Early Church and Why It Matters Today*. Grand Rapids, Michigan: Kregel Publications.

Herbst, N., J. (2017). *Leader-Leader Exchange in Shared Leadership Teams: An Investigation of Collaborative Harmony Among Co-Leaders in Christian Ministry.* (Doctoral Dissertation). Retrieved from Piedmont International University Library.

Hesselbein, F., & Goldsmith, M. (2009). *The Organization of the Future 2: Visions, Strategies, and Insights on Managing in a New Era.* San Francisco, California: Jossey-Bass.

Hiller, N., J., Day, D., V., & Vance, R., J. (2006). Collective enactment of leadership roles and team effectiveness: A field study. *The Leadership Quarterly, 17 (4),* 387-397.

Hoch, J. (2013). Shared leadership and innovation: The role of vertical leadership and employee integrity. *Journal of Business and Psychology, 28* (2), 159-174.

Hui-ying, M., & Jian-peng, W. (2013). The impact of shared leadership on innovation performance. Institute of Electrical and Electronics Engineers, July 17-19, 2013. 2013 International Conference on Management Science and Engineering (20th). 1385-1390.

Jiang, W., Gu, Q., & Wang, G. (2015). To guide or to divide: The dual-side effects of transformational leadership on team innovation. *Journal of Business and Psychology, 30* (4), 677-691.

Khourey-Bowers, C., Dinko, R., L., Hart, R., G. (2005). Influence of a shared leadership model in creating a school culture of inquiry and collegiality. *Journal of Research in Science Teaching, 42* (1), 3-24.

Kleinman, C., S. (2004). Leadership: A key strategy in staff nurse retention. *Journal of Continuing Education in Nursing, 35* (3), 128-132.

Laloux, F. (2014). *Reinventing Organizations*. Brussels, Belgium: Nelson Parker.

Lee-Davies, L., Kakabadse, N., K., & Kakabadse, A. (2007). Shared leadership: Leading through polylogue. *Business Strategy Series, 8 (4),* 246-253.

Lee, K., C., Lee, D., S., & Seo, Y., W. (2011). Proceedings of the 5th International Conference on Ubiquitous Information Management and Communication: Effects of shared leadership on team creativity through knowledge sharing in an e-learning environment. New York, New York: Association for Computing Machinery.

Lee, D., Lee, K., Seo, Y., & Choi, D. (2015). An analysis of shared leadership, diversity, and team creativity in an e-learning environment. *Computers in Human Behavior, 42*, 47-56.

Lovelace, K., J., Manz, C., C., & Alves, J., C. (2007). Work stress and leadership development: The role of self-leadership, shared leadership, physical fitness and flow in managing demands and increasing job control. *Human Resource Management Review, 17* (4), 374-387.

Malburg, C. (1997). Surviving explosive growth. *Journal of Accountancy, 184 (6)*, 67-72.

Manz, C., Skaggs, B., Pearce, C., & Wassenaar, C. (2015). Serving one another: Are shared and self-leadership the keys to service sustainability? *Journal of Organizational Behavior, 36* (4), 607-612.

Mathieu, J., E., Kukenberger, M., R., D'Innocenzo, L., & Reilly, G. (2015). Modeling reciprocal team cohesion-performance relationships, as impacted by shared leadership and members' competence. *Journal of Applied Psychology, 100* (3), 713-734.

McLeod, P., L. (2013). Distributed people and distributed information: Vigilant decision-making in virtual teams. Small Group Research, 44 (6), 627-657.

Miles, S., A., & Watkins, M., D. (2007). The leadership team: Complementary strengths or conflicting agendas? *Harvard Business Review, 85 (4)*, 90-98.

Moe, N., B., Dingsøyr, T., & Kvangardsnes, Ø., (2009). Proceedings of the 42nd Hawaii International Conference on Systems Sciences: Understanding shared leadership in agile development: A case study. Honolulu, Hawaii: Shidler College of Business.

Mohammed, M., & Thomas, K. (2014). Enabling community and trust: Shared leadership for collective creativity. *Foundation Review, 6* (4), 96-105.

Nurmi, R. (1996). Teamwork and team leadership. *Team Performance Management, 2* (1), 9-13.

Olivia, Y., & Shao, E., Y. (1996). Shared leadership in self-managed teams: A competing values approach. *Total Quality Management, 7 (5)*, 521-534.

Oswald, J. (2018). Why we should embrace anarchy in the workplace. *Management Today*, 2.

Panahifar, F., Heavey, C., Byrne, P. J., & Fazlollahtabar, H. (2015). A framework for collaborative planning, forecasting and replenishment (CPFR). *Journal of Enterprise Information Management, 28 (6)*, 838-871.

Park, J., G., & Kwon, B. (2013). Literature Review on Shared Leadership in Teams. *Journal of Leadership, Accountability & Ethics, 10 (3)*, 28-36.

Pearce, C. L. (2004). The future of leadership: Combining vertical and shared leadership to transform knowledge work. *Academy of Management Executive, 18 (1)*, 47-57.

Pearce, C., L. (2007). The future of leadership development: The importance of identity, multi-level approaches, self-leadership, physical fitness, shared leadership, networking, creativity, emotions, spirituality and on-boarding Processes. *Human Resource Management Review*, 17 (4), 355-359.

Pearce, C., L. & Conger, J., A. (2003). *Shared leadership: Reframing the hows and whys of leadership*. Thousand Oaks, California: Sage Publications.

Pearce, L., C., Manz, C., C., & Akanno, S. (2013). Searching for the holy grail of management development and sustainability: Is shared leadership development the answer? *Journal of Management Development, 32* (3), 247-257.

Pearce, C. L., & Sims, H. P. (2002). Vertical versus shared leadership as predictors of the effectiveness of change management teams: An examination of aversive, directive, transactional, transformational, and empowering leader behaviors. *Group Dynamics: Theory Research and Practice, 6 (2),* 172-197.

Perry, J. (2000). Multidisciplinary shared leadership. *Journal for Healthcare Quality, 22* (3), 18-21.

Petrovia, P., & Hristov, D. (2016). Collaborative management and planning of urban heritage tourism: Public sector perspective. *International Journal of Tourism Research, 18 (1),* 1-9.

Schein, E., H. (2009). *The Corporate Culture Survival Guide*. San Francisco, California: Jossey-Bass.

Serban, A., & Roberts, A., J., B. (2016). Exploring antecedents and outcomes of shared leadership in a creative context: A mixed-methods approach. *Leadership Quarterly, 27* (2), 181-199.

Shipper, F., Manz, C., C., Nobles, B., & Manz, K., P. (2014). Shared entrepreneurship: toward an empowering, ethical, dynamic, and freedom-based process of collaborative innovation. *Organization Management Journal, 11 (3),* 133-146.

Sivasubramaniam, N., Murry, W. D., Avolio, B. J., & Jung, D. I. (2002). A longitudinal model of the effects of team leadership and group potency on group performance. *Group & Organization Management, 27 (1),* 66-96.

Solansky, S., T. (2008). Leadership style and team processes in self-managed teams. *Journal of Leadership & Organizational Studies, 14* (4), 332-341.

Somboonpakorn, A., & Kantabutra, S. (2014). Shared leadership and shared vision as predictors for team learning process, synergy and effectiveness in healthcare industry. *International Journal of Innovation and Learning, 16* (4), 384-416.

Spillane, J. P., Halverson, R., & Diamond, J. B. (2004). Towards a theory of leadership practice: A distributed perspective. *Journal of Curriculum Studies, 36 (1),* 3-34.

Steinert, T., Goebel, R., & Rieger, W. (2006). A nurse-physician co-leadership model in psychiatric hospitals: Results of a survey among leading staff members in three sites. *International Journal of Mental Health Nursing, 15 (4),* 251-258.

Stewart, G. L., Astrove, S. L., Reeves, C. J., Crawford, E. R., & Solimeo, S. L. (2017). Those with the Most Find It Hardest to Share: Exploring Leader Resistance to the Implementation of Team-Based Empowerment. *Academy of Management Journal*, 60 (6), 2266–2293.

Strauch, A. (1995). *Biblical Eldership: An Urgent Call to Restore Biblical Church Leadership*. Colorado Springs, Colorado: Lewis & Roth Publishers.

Supovitz, J., A., & Tognatta, N. (2013). The impact of distributed leadership on collaborative team decision making. *Leadership & Policy in Schools, 12 (2),* 101-121.

Taylor, G. (2013). Implementing and maintaining a knowledge sharing culture via knowledge management teams: A shared leadership approach. *Journal of Organizational Culture, Communications & Conflict, 17* (1), 69-91.

Timperley, H. (2005). Distributed leadership: developing theory from practice. *Journal of Curriculum Studies, 37* (4), 395-420.

Tzabbar, D., & Vestal, A. (2015). Bridging the social chasm in geographically distributed R&D teams: The moderating effects of relational strength and status asymmetry on the novelty of team innovation. *Organization Science, 26* (3), 811-829.

Van Bunderen, L., Greer, L. L., & van Knippenberg, D. (2018). When Interteam Conflict Spirals into Intrateam Power Struggles: The Pivotal Role of Team Power Structures. *Academy of Management Journal*, 61 (3), 1100–1130.

Wang, D., Waldman, D., A., & Zhen, Z. (2014). A meta-analysis of shared leadership and team effectiveness. *Journal of Applied Psychology, 99* (2), 181-198.

Williamson, R., & Blackburn, B. (2019). Collaborating Through Shared Decision-Making. *Education Digest*, 84 (8), 21–25.

Wood, M., S., & Fields, D. (2007). Exploring the impact of shared leadership on management team member outcomes. *Baltic Journal of Management, 2* (3), 251-272.

Woods, A., M., & Weasmer, J. (2002). Maintaining job satisfaction: Engaging professionals as active participants. *Clearing House, 75* (4), 186-189.

Leadership challenges of urban institutions of higher learning, which serve a predominantly diverse and multi-cultural student population

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Abstract

The topic of this research article examines the unique leadership challenges confronted by staff and faculty of higher education institutions that serve a predominantly diverse and multi-cultural student population in urban areas of the United States. Urban colleges and universities are found in the large metropolitan cities of the United States where students are from the area, as well as domestic and international. The study isolates five areas of concern that raise leadership challenges for these institutions of higher learning. Specific areas of challenge are the rising cost of tuition, retention, student preparedness for higher education, technology, and gainful employment. The exploratory research within this study was conducted primarily in the New York tri-state area. It is qualitative in nature and conclusions are based on research and observations of subjects directly affiliated with these institutions.

Key Words: Leadership, Higher Education, Cultural Assimilation, Retention, Diversity, Multi Culturalism

Introduction

This article seeks to explore factors related to current leadership issues in urban higher education. This is a study conducted among several urban communities where most, who graduate from the local public school systems are academically challenged to succeed in college. Apart from academic concerns, first-time College students from these areas find themselves challenged to succeed because of other issues such as being from under-represented populations, various multi-cultural backgrounds, first-generation college students, or of economically challenged families.

Urban institutions find themselves challenged to navigate through issues that do not resonate in traditional and upper-tier universities throughout the United States. These issues require the leaders of urban colleges to examine reasons and solutions to help students prevail in a difficult social environment.

Methodology

The research for this article is qualitative in nature and explores one segment of higher education and related issues using a case study format. It is the intention of this article to raise awareness, questions, and ongoing topics for further research. Leadership is rooted in the ideology of influencing people to succeed and grow productively. This study seeks to shed light on the challenges of leading organizations of higher education in an urban community. Data for this research was acquired from interviews conducted of urban higher education stakeholders such as executives, staff, faculty, and

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students. The scope of data is intentionally broad for the sake of acquiring a deeper understanding of issues pertaining to the article's topic. Participants of the study represented the following community of stakeholders:

- Four academic deans
- Two associate professors
- Two adjunct instructors
- Three full-time student
- Five part-time or continuing education student

Before meeting with participants, they all received correspondence outlining the topic of this study discussing contemporary/future issues regarding leadership in higher education. The selected group is directly involved within this community of urban higher education in order for information to be relevant and revealing. Participants were asked a few specific open-ended questions and were encouraged to expound liberally.

- Describe your experience working with or attending a college that serves a multi-cultural community.
- Describe the student learning experience.
- Describe the challenges for faculty teaching students from diverse multicultural backgrounds.
- Do you have any additional comments or issues regarding challenges in urban education?
- Is the urban college graduate, adequately prepared for professional life after college?

Participants were very cooperative, although some had more time than others to sit down for at least 30 minutes. There was an expectation that some or all questions would lead into other issues, and they did. After an analysis of all responses, emergent themes and issues were revealed pertaining to this topic. The findings of this study are presented in a salient manner. The emergent issues of this study are

1. The rising cost of tuition
2. Student retention
3. Student preparedness for higher education
4. Technology
5. Gainful employment

This exploration will attempt to look at these issues objectively and offer practical recommendations based on respondents and analysis. Recommendations offered in this paper are without a test for validity but are presented in hope that they will serve as themes for further research and exploration.

The Rising Cost of Tuition

The rising cost of tuition is a major source of concern for the respondents, along with other issues associated with it. There is a major concern with the enduring and sometimes un-manageable debt students acquire through education loans and repayment of federal and state grants caused by students withdrawing from courses or universities in general. According to several respondents and facts, student debt is at epidemic proportions. College graduates find themselves in the middle of an abundant but poor paying job market partly because many lack experience to go with their education. According to one student participant, "the loans we have to pay back are equivalent to the mortgage of a small house that we can never afford to live in."

An issue in urban cities that relates to demography is the dichotomy between the very wealthy and the very poor. For example, in New York City, most of the economically challenged residents are

from African-American and Hispanic-American backgrounds. There is a direct correlation between education and levels of poverty in the world, as suggested by the economic philosopher Adam Smith in 1776 (1976). According to one respondent, Professor B, "poverty just creates more poverty. It would make sense that education is the key to rising above this. Regretfully, most of the students that do graduate from college find themselves in debt before they can even find a job within their discipline."

Another exasperating issue here is the large percentage of students who never complete their college studies and find themselves in debt with student loans and other financial assistance that they have to pay back. The United States federal government is unforgiving in this regard. The same government will guarantee loans knowing that most students will not graduate from college (Chen 2012). In large urban cities, loans are an issue, but there is also the issue of federal and state grants. These grants become the liability of the student if the student drops out in the middle of a semester or before they complete their degree (Dynarski & Scott-Clayton, 2013).

There are various reasons why this happens and why there are concerns. One participant of this study, Dean A, adds

> "One reason is poor education in financial planning. Most of our students are from impoverished backgrounds. They are from single-parent households with more than two siblings in the picture. Parents are often receiving public assistance from the government, and there is usually no financial planning learned by anyone in the household. The parents are usually in debt and students enter college with no real idea that they eventually have to pay back the money they receive for their education, by way of loans. They will often become victims of lending institutions that engage in predatory lending practices."

This quickly becomes a critical issue because student loan debt is the second largest debt in this country after home mortgages (Statista, 2018) at 1.44 trillion dollars. Respondents did offer some recommendations to help students navigate this issue

Recommendations

This is a difficult matter to resolve because tuition rates will continue to rise. In fact, the price of most things eventually rises. High tuition affects everyone, especially the economically challenged in urban populations. I believe the federal government can make a difference. According to statistics, only 7% of recent college graduates come from lower income levels, but they are the ones amassing the most debt (Mah, 2013). According to respondent, Professor A, "this is because many students enter college as a means of improving their lives, unfortunately many of those who dropout are from poor economic situations."

The current government's solution is to keep guaranteeing loans for education and federally funding schools based on performance. This means that some of the schools receiving government help are ones that need it the least. Because of poor performance, many politicians have made it their mission to block aid to for-profit colleges, which serve a predominant urban and international student population. The last Presidential Administration (Democratic) had been critical because of high college dropout rates. The Current presidential administration (Republican) is a supporter of for-profit colleges but many members of the opposition party are not. This is ironic because the majority of students that attend these for-profit schools are the under-represented members of society that the Democratic Party wants to represent. Policies that make the pursuit of higher education challenging, greatly hinder the ability of these students to move up the economic and social ladder.

Academic Dean C suggests a limit on government aid to schools that financially do not need it and increase aid to for-profit schools and community colleges that serve students from the inner city, urban areas, such as New York City. One dean from an [unnamed] for-profit school in the Bronx, with a student population of over 90% members of under-represented groups, describes how they cannot financially compare to an upper tier school like the University of Michigan in physical size, financial worth, and student population. According to the University of Michigan's website, 4.6% of their enrolled students are black, and less than 6% of their enrolled students are Hispanic (Student Life Research, 2016). Compared to Barrio College [pseudonym], a for-profit college where 44% of enrolled students are Black or African American, and 36% are of Hispanic origin (Big Future, 2016). The difference is evident and resonant. If it were not for small urban colleges, many minority students would not get a college education. This then uncovers a discussion of diversity and economic disparity where two major groups, Hispanics, and Blacks, are suffering most of the consequences.

With increased funding, smaller urban colleges can offer more financial aid and educational programs that can improve the academic achievement of their students. Student Respondent C supports the idea of more funding to smaller colleges if they also agree not to raise tuition in exchange for receiving more government aid. This would be one alternative to controlling rising tuition costs. Increased aid will not affect upper tier universities because students that are more eligible for government aid are not their target student market. At present, such an idea would need the support from government leaders. This would mean that the colleges serving these populations must produce quantifiable reports to support their cause. Many sides could benefit from such an approach, but in the end, students from urban areas will benefit greatly and have an opportunity to improve their future economic outlook.

Student Retention

Student retention refers to the concept of keeping students enrolled in college in order to improve degree completion rates. Adjunct Participant B stated, "I must admit that I never think of this topic, only when a student withdraws from one of the courses I teach. I suppose this is because I look at this on a micro level, but school officials are looking at this from a broader perspective." Retention is a major success factor because most students who enter a college or university do not graduate. The national average is 33%, and in some cases like New York State, for example, the average is 21.4% (NCHEMS, 2014). These statistics can seem alarming and this does not include the number of students who never even go to college. In some instances, the issues discussed in this study overlap, one reason students drop out of college is that of cost, and yet another reason is that many are academically unprepared.

Many other factors affect retention. According to StateUniversity.com (2018), the following are issues that contribute to rising dropout rates:

- Students enter college with a blind eye and low expectations of academic demands
- Life situations and other outside demands
- The party animal
- Broken relationships
- Homesickness
- Job force: short-term vs. long-term
- No individual attention or guidance

As an example, most students that graduate from the New York City school system, and go to college, are commuter students. Many do not meet the academic requirements to get into upper tier universities. Therefore, their only academic alternative is to enter into the New York City University system, which has community colleges and four-year schools in every borough. This makes attending college convenient, but the college experience for many NYC residents is wrought full of obstacles. In a paper presented in 2012 at the 8th Annual Symposium at The University of Oklahoma:

> "Eighteen percent of CUNY community college students support at least one child, and 76% are from households with annual incomes below $40,000…34% spend at least six hours per week providing care for other people and 52% work at least part-time. All of these factors are associated with a decreased likelihood of postsecondary success." (Kolenovic, Linderman, & Mechur-Karp, 2012)

According to Student Participant A, "I can personally attest to how growing up in the New York City school system is not easy. Most students are on some kind of public assistance, and the rest have to work to make ends meet. Add to this the personal problems we all go through living here." Student Participant A eloquently describes the calamity of "personal problems" that are common among urban students who use this vague description as an excuse to not complete work or worse even, to quit school. According to Participant Professor B,

> "Every time I hear this [personal problems], I am compelled to pause and take a moment to counsel the student by affirming that "personal problems" or "life issues" are constant. No one is immune, not even the instructor. Some get it and, unfortunately, some do not. The system of higher education is a machine that operates seven days a week, 24 hours a day. Many of NYC's urban students have a difficult time balancing all aspects of their life. Colleges in this area could intervene more to retain more students."

Recommendations

From a leadership perspective, student retention should start with the college administration and be supported by course instructors. It is understandable how college represents a life threshold for many individuals. It is a rite of passage for students transitioning into adulthood. Traditional institutions take a “hands-off” approach to governing students. Meaning, students orientate themselves to college and adult life with little intervention from the institution. This approach works well at larger, more traditional universities where the majority of the student population is from a middle-class economic population or higher. This is not the case for most urban students. Most come from impoverished, single parent homes. The responsibility of self-directed education can be overwhelming to students who are accustomed to a more formal structured educational system.

Many urban colleges operate on a trimester schedule because it keeps students attending classes almost year round with the benefit for students, who stay the course, to graduate in less than four years. This is a concept that most of the for-profit schools incorporate. The City University of New York system, however, operates more traditionally and their retention rate suffers because students have a three-month break from school in the summer. Many find jobs and do not come back. Regardless of how the semesters are structured, NYC colleges could benefit from offering more personalized attention to students. They could start by keeping track of student attendance. Making this a policy and having professors incorporate it into their grading schematic will help to identify students at risk of failing and dropping out. Colleges should urge professors to reach out to students that are at risk of failing and urging these students to return to class. This would mean slightly more work, but if successful, the extra effort could result in higher retention and increased enrollment.

Many instructors might object to the idea of contacting students reminding them to attend class or inquire as to their absence from class. Participant Dean C, who is from a for-profit college states,

> "I find this to be an effective way of keeping students in school. I do it often, and I encourage my professors to do so as well. I believe students genuinely appreciate the concern I have for their well-being. I do not have to do this, but I believe that reaching out to a student in need is a socially responsible act. It can be time-consuming, but I find that it enriches my spirit. Just last Sunday, I was wrapping up an online course. Students in this particular course had to complete an online final exam with an 11:00 PM deadline. I logged in at 9:00 PM to see if all the students had completed their exam. To my surprise, six had not. I proceed to call them, and they all had forgotten about the exam. Two of the students live outside the U.S.; one lives in Antigua, and the other in Jamaica. They were genuinely thankful I called them because they all would have failed if they had not taken this exam. I do not know if they would have dropped out of school if they failed but I have to believe that completing a course helps motivate an individual to complete what they started."

Student Preparedness for Higher Education

Student preparedness is a critical issue that is associated with retention. Most of the respondents in this study described, in one form or another, how most students who enter the City's community colleges or for-profit colleges must take and pass remedial courses before they can even take any credit courses. In a report published in 2017, 80% of NYC's HS graduates need to take remedial math and English before they can enter the CUNY community colleges (Educationdive, 2017). If students do not possess minimum academic foundations before attending college, it makes sense that dropout rates will continue to rise. According to Participant Adjunct A, "I teach, based on assignment, in four colleges. Two are private institutions, one is a community college, and the other is a for-profit school. I see the difference. The two private schools have high academic standards and high retention, whereas the community college and the for-profit college have low academic standards and poor retention."

Urban students that are not prepared for the rigors of a college education are often starting in an unsettled manner, especially since most students graduating from the public education system are of Hispanic or Black origin. In an effort to emphasize this further, 51% of Caucasian graduates and 56% of Asian-Americans are academically qualified and prepared to attend college. In comparison, statistics outline how 85% of Hispanics and 87% of black students are not academically prepared to attend college (Otterman, 2011). The difference is evident, and it is startling. The numbers would suggest that most urban students raised in an urban environment are at an educational disadvantage. It should be the responsibility of every stakeholder in urban communities to help improve these numbers. Unfortunately, it is hard to break free from cultural restraints. One could safely suggest that Hispanic and Black parents want the best for their children, but unfortunately, they cannot provide the academic mentoring their children need because many lack familiarity with higher educational culture. According to Student Participant B,

> "My educational journey was difficult. My mom and everyone I knew from her generation were blue-collar workers with no more than an eighth-grade education. The fact that I was able to graduate high school was a major accomplishment in my family's eyes. As well intended as my mom was, she could not relate nor guide me in my journey. I became a statistic shortly after graduating high school and going to college. It is not that I found college academically challenging, it is that I had too much freedom and I failed to balance school and

personal life. As I failed, it became quite evident that I did not have an effective support system. I eventually found my way and went back to school."

Recommendations

Local municipalities could start a program, with local colleges, which offer incentives to students who attend urban colleges after graduating high school. The colleges can get more involved in the high schools by teaching entry-level courses that offer the students college credits. Alternatively, since 80% of local students are entering college and taking non-credit remedial courses, the colleges could offer these courses at the HS level. These courses could serve in familiarizing the student to a college expectation experience. Students will enter college with an idea of what their outlooks as students may be. When they eventually enroll into a local college, it will feel like the student is starting their second semester and that statistically improves the student's chances of staying in college (Blekic, Carpenter, & Cao, 2017).

Another recommendation may seem radical, but there should be a way to evaluate the performance of high school guidance counselors based on the college graduation rate of students under their advisement. This would improve their involvement and the quality of advice urban students receive. Counselors could address a wide array of topics such as homesickness, and college expectations. Counselors can work off a checklist that would guide their discussions with students. An important part of the advising should be on financial counseling. To do this effectively, counselors could undergo a certification training beforehand in an effort to ensure proper college advising.

Technology

All of the respondents had comments about technology. They all agree that modern classrooms should have large monitors connected to computers to share videos and make power point presentations. Respondents from the New York City area were in agreement that colleges are starting to provide this, but most feel that the technology becomes outdated fast and institutions are slow to react. Another interesting issue regarding technology is smartphone use in classrooms. All respondents assert it is hard to control and some even describe how students seem to be addicted to its usage like a drug. According to Participant Professor A,

> "As an instructor, I am bothered by the prevalence of smartphones. I know first-hand how distracting smartphone use is in a classroom. It is hard to police because even if you ask students to put their phones away they then take out their tablets or laptop computers. This is unlike anything I have ever experienced, I believe that technology, and how it is used is a serious problem that needs discussion."

Participant Professor B added,

> "I have also been wrapping up the semester courses I teach. This is usually when students present their final presentations. Every time a group would show a video as part of their final project presentation, the video would freeze because of buffering issues. This occurred 100% of the time on three campuses. This may not seem like a big deal, but I consider this a reflection of technology and it its use at two different colleges. It is mandatory for colleges to catch up with evolving technology. I am no expert but the very least any college can provide its students, faculty, and staff is reliable technology."

Technology also brings up the issue of what can only be described as "distracted students". Modern students seem to spend most of their time using their smartphone. Apart from talking, students are using their phones now for listening to music, texting, social media, and internet access. It seems

lately people walk around like zombies with their faces buried in their phones. People in the U.S.A. are all living in an age where information is immediate, social and otherwise. This issue transcends into a classroom and can potentially distract an individual from learning (Felisoni & Godoi, 2018). Fifteen years ago, this was a non-issue. Now it has become an unpopular topic of discussion when professors bring up the subject of phone-usage to students during class. Many professors are now writing smartphone policies into their course outlines.

Recommendations

It was not long ago that modern technology in a classroom consisted of an overhead projector. In 2019, institutions of higher learning try to adapt to current technology but the technology colleges adopt become outdated quickly. According to Participant Student B, "Wi-Fi in school will often work slowly and the computers hard-wired into classrooms are often outdated and have slow internet access." Technical issues often hinder instructor and student presentations. Participant Dean C states, "I suspect the reason this is happening is that colleges do not manage this aspect of learning as other industries do. Other industries invest time and money ensuring that organizational technology is current to technological standards."

All colleges have an IT department, and these departments spend much of their time reacting to and fixing technical problems, rather than improving infrastructure. This is a fulltime endeavor. Participant Dean B adds,

> "I suggest that schools look upon IT as a way of creating a competitive advantage regarding student learning. As technology evolves, technological infrastructure divisions often strain to meet the demands of students, faculty, and staff. Everyone connects to the internet in school. Whether it is through their smart phones, tablets, or laptops, thousands of people can connect to their campus Wi-Fi at any given time. This is not just an inner-city college issue."

Colleges have to update their technology regularly. More and more students are using their mobile devices to access the school's website and learning sites. According to an article by Noel Levitz (2013):

> "In response to the rising use of mobile devices among high school students, more than one-third of four-year colleges and universities nationally now have mobile-optimized Web sites. Specifically, 39 percent of four-year public universities and 35 percent of four-year private colleges now have a Web site that is optimized for mobile browsing. The study also found these figures are set to double within the next year, as at least half of the study's respondents that are currently without mobile-optimized sites reported they were preparing to launch one by spring 2014".

Colleges are starting to understand the implications of having up-to-date technology, but a buy-in of 100% of the institutions could only happen if these institutions are committed to updating technology on a regular basis. A major issue with this solution is the cost factor. Colleges must understand that investing in technology would make their institutions more modern and marketable.

Regarding the issue brought up by the respondents of this study pertaining to the distraction of mobile devices, there is uniform concern. This is an issue of concern because it permeates into every classroom. According to a poll conducted by Zeitlinger, 176 million people reported being addicted to their mobile device (2014).

> "(Teens) are not just accustomed to mobile, they expect their mobile device to handle nearly every type of task and communication," Flurry said in its report… "The same is true for college students who are noticeably avid users of messaging and gaming apps. They have just

> entered the workforce, are predominantly single and are likely out and about more often than older and younger segments."

One recommendation for controlling this distraction on a classroom level is to prohibit its use. This policy should be included in a professor's course outline, and the instructor should discuss the implications of its use openly at the start of every semester. An open dialogue is a great opportunity for students to voice their concerns and for instructors to reiterate the virtue of uninterrupted learning. The administration of colleges should encourage all instructors to cooperate with spreading this message. What is most important is the creation of a culture that supports technology but not to the point that it distracts in-class learning. Currently, there is a growing uncontrolled sub-culture in many higher learning environments regarding smartphone use (Targamadze & Bulajeva, 2018). There are not enough studies on this subject but the numbers are growing. It would be interesting to understand if excessive smartphone use has an effect on cognitive learning. Technology in the classroom is essential but only if it enhances learning, not hinders it. Until more studies can demonstrate otherwise, it is best to avoid the mobile devices by creating a policy against its use in the classroom.

Gainful Employment

Gainful employment is a measure of college graduates who obtain employment after completing a degree. During the last presidential administration, the federal government measured college and university success in this category and scrutinized those institutions that performed poorly at it. This brought much attention to for-profit schools that serve many urban communities, charge high tuition, and have a high number of graduates who cannot find work. This was partly because the job economy at the time was poor and many of these schools were not offering the quality education offered by schools that are more traditional. In fact, a graduate sued one for-profit college in 2009 because she claimed the school did not do an adequate job of helping her find gainful employment after she graduated (CNN, 2009). It is important to note that the suit was thrown out of the judicial system because it lacked merit but not before it caught the attention of the federal government. The current presidential administration does not hold colleges accountable for gainful employment rates after graduation but with a new presidential election less than two years away, this issue may resurface again.

If we consider college education training for the future, then students should expect to be employable after graduation and in turn, the institution, which grants these degrees, will assist them in finding a job. When this happens successfully, everyone involved wins. As stewards of education, universities then fulfill a basic obligation of providing a higher education degree and the students in turn, become productive members of society through gainful employment.

According to Participant Professor A, "I believe that students will eventually fair better in life with a college degree than without one. There will always be a connection between wealth and education. I am sure it is tough to find a good paying job upon graduation." In a press briefing on July 27, 2013, William C. Dudley, Chairman and Chief Executive Officer of the Federal Reserve Bank of New York, said the following:

> "It is important for us to undertake this kind of analysis because, as we'll show, newly minted graduates always take some time to transition into the labor market and find jobs that utilize their education. And young people with college degrees still fare far better than those without. At the same time, with the sluggish jobs recovery from the recession, it's clear that the transition of recent graduates into the labor market is taking longer, and they've experienced higher unemployment and higher underemployment than in years past. Still, while times have

> gotten tougher for recent graduates, we shouldn't be too hasty in concluding that getting a college education won't help people find good jobs." (2013)

Recommendations

One recommendation to solving the gainful employment issue is to improve the career services department of most colleges. This would help greatly but the classroom experience can also help gainful employment. Colleges in the urban communities can benefit greatly from hiring instructors that have similar backgrounds or can culturally relate to their students. Multiethnic differences are a cultural and communication gap in the higher education landscape (Magaldi, Conway, & Trub, 2018). Students are already entering urban colleges with the statistical likelihood they will fail. If they do graduate, they do so without any experience or skills, just an education. The conscience hiring of instructors from similar backgrounds could serve as positive role models for students. They can relate to these instructors' personal experience, and in turn, these instructors serve as influential role models to their students. Student participant B described the experience meeting an accomplished instructor from a similar area of Jersey City, New Jersey than him. The participant gave an account of how meeting an instructor with a similar background was inspiring and made the course interesting. Participant Professor C added, "I am from the same neighborhood many of my students are from. I can relate to their unique challenges." The same participant appeared to get very emotional during the interview and went on to say,

> "In the fourteen years, I have been serving as an adjunct, I have advised five former students through graduate school, career, and eventually in the role of graduate instructor. Four are from the New York City area and one is from Ghana. they all entered college with much uncertainty and have found success through education, commitment, and hard work. I connect with them often, and we discuss all issues relating to economic background, residential location, and education. We agree that students need role models they can relate to and trust. When I hear "I can't," I see an opportunity to look students in the eye and say, "yes you can." This resonates and drives home the point of believing in oneself."

It makes sense to hire more instructors who share similar backgrounds as most of their students. Instructors should be willing to teach life lessons as well as curriculum driven lessons (Loera, Rueda, & Oh, 2015). Instructors should be able to share their own experience in order to give students an idea of what they can expect in the real world. Students benefit from these lessons as they move into the job market. Colleges benefit by graduating committed alumni that are able to find gainful employment and career success because of lessons learned inside a classroom taught by instructors that helped students believe in their abilities.

Another further recommendation is to revisit the career service office, which exists in all colleges, and consider a different way of conducting business. Like technology, the employment landscape has changed dramatically in the last twenty years. Employers, more than ever, currently seek leadership attributes in potential candidates. In an article by Laura M. Colarusso (2014), she articulates how some universities are offering programs that help fill the skills gap between education and gainful employment.

> "'You can sit in a room and learn economic theory from a professor or a textbook, but at the end of the day, it's still just theory,' said Wei, who now works as a data analyst, 'they don't teach you how to apply that theory. The Tuck School of Business at Dartmouth offers a similar month long program in the summers for $10,000 and is expanding it to December. Harvard

Business School just started a $1,500 online course to teach undergraduates elsewhere 'the fundamentals of business thinking.'"

These are great ideas, unfortunately because of financial concerns; these programs do not target many urban students.

A recommendation here would be that career service offices start developing programs to offer additional job skills training, free of charge to students graduating from their institutions. A seminar on leadership would certainly help students bridge this gap. This seminar should include orientation on the following:

- Emotional intelligence – that includes communication, verbal, written and listening
- Technological – cannot assume all students are computer savvy because they know social media. Must make sure they know computer technology for business
- Change management – This is a concept many new employees have trouble grasping
- Ethics – a good review of this is necessary and important is always useful
- Conflict resolution – conflict in any business is often inevitable. Understand the causes of conflict and ways to resolve is important to any professional

Offering seminars, free of charge, could potentially be self-sustaining while creating more employment opportunities for graduates. This measurable success would be recognized by the Unites States Department of Education, and qualify the institutions for more government aid, as outlined by the current government administration.

Counsellors, in most career offices, should have the skills to facilitate such a seminar but if not, there is a pool of deans and instructors to pull from. In fact, academic deans should be involved in the creation of such seminars to ensure academic uniformity in concepts taught. In the end, gainful employment is an issue that affects the actual students most of all. Colleges have an ethical obligation to offer career assistance. These offices cannot continue to run as they did 25 years ago. Businesses have evolved, so should the potential job applicant and the offices that assist them

Conclusion

Higher education is a highly imperfect industry shaped with perfect intentions. Urban higher education is challenging because of the complex nature of the students and the industry's organizational processes. The issues uncovered in this research serve to add to the discussion on this topic, while proposing ideas for further research.

Leadership carries with it many challenges. For institutions immersed within urban communities, there is the challenge of bridging the gaps of social-culture, communication, technology, and economics. Doing so requires a heightened sense of familiarity and wisdom regarding the population of students they serve. The barriers that exist for these students are systematically created by systems that shape behavior from early childhood to adulthood. There is opportunity for leaders to transform the lives of an under-represented community of students that are deserving of a chance to succeed. Ideally, institutions of higher learning exist to educate and serve. This service should resound for a lifetime. Students from urban communities are then given the opportunity to lead, give back, and model successful behavior that has the ability to change the paradigm of under-representation.

References

The College Board. (2016). *Big Future*. Retrieved from https://bigfuture.collegeboard.org/college-university-search/monroe-college#

Blekic, M., Carpenter, R., & Cao, Y. (2017). Continuing and Transfer Students: Exploring Retention and Second-Year Success. *Journal of College Student Retention:Research, Theory, and Practice*.

Alumna Sues College Because She Hasn't Found a Job. *CNN.com*. (2009). Retrieved from http://www.cnn.com/2009/us/08/03/new.york.jobless.graduate/

Colarusso, L. M. (2014, July 8). Students are Paying Extra for Business Skills They Say They Haven't Learned on Campus. *The Hechinger Report*. Retrieved from http://hechingerreport.org/content/students-paying-extra-business-skills-say-havent- learned-campus_16334/

Dudley, W. C. (2013, June 27). Are Recent College Graduates Finding Good Jobs? *Federal Reserve Bank of New York*. Retrieved from https://www.newyorkfed.org/newsevents/speeches/2013/dud130627.html

Dynarski, S., & Scott-Clayton, J. (2013). Financial Aid Policy: Lessons from Research. *National Bureau of Economic Research, 23*(1), 67-91.

CUNY Leaders: 80% of Freshmen Need Remediation, Fewer than Half Return. (2017). *Educationdive*. Retrieved from https://www.educationdive.com/news/cuny-leaders-80-of-freshmen-need-remediation-fewer-than-half-return/438579/

Felisoni, D. D., & Godoi, A. S. (2018, February). Cell Phone Usage And Academic Performance: An Experiment. Journal of Computers and Education. *Journal of Computers and Education, 117*, 175-187.

Kolenovic, Z., Linderman, D., & Karp, M. M. (2012). Improving Student Retention and Graduation via Comprehensive Supports: Two- and Three-Year Outcomes from CUNYs Accelerated Study in Associate Programs (ASAP). *Community College Review, 41*(4), 271-291. Retrieved from http://www1.cuny.edu/sites/asap/wp-content/uploads/sites/8/2015/04/kolenovic_linderman_karp_ccr_2013_improving_student_outcomes_print_version.pdf

Levitz, R. N. (2013). College E-Recruiting Strategies: Is Your Campus Keeping up With Technology? *Education Insights*. Retrieved from https://www.ruffalonl.com/college-e-recruiting-strategies/

Loera, G., Rueda, R., & Oh, Y. J. (2018). Learning and Motivational Characteristics of Urban Latino High School Youth. *Journal of Urban Education, 53*(7), 875-898.

Magaldi, D., Conway, T., & Trub, L. (2018). I Am Here for a Reason: Minority Teachers Bridging Many Divides in Urban Education. *Journal of Race Ethnicity and Education, 21*(3), 306-318.

Mah, J. (2013). Looking for Solutions to Rising Education Costs. *The State Press, Arizona State University*. Retrieved from http://www.statepress.com/2013/10/20/looking-for-solutions-to-rising-education-costs/

NCHEMS Information Center for Higher Education Policy Making. (2014). Retrieved from http://www.higheredinfo.org/dbrowser/index.php?measure=92

Otterman, S. (2011, June 14). College-Readiness Low Among State Graduates, Data Show. *The New York Times*. Retrieved from https://www.nytimes.com/2011/06/15/nyregion/37-of-new-york-graduates-meet-college-readiness-standard.html

Smith, A. (1976). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Oxford, United Kingdom: Oxford University Press.

StateUniversity.Com (2018, December 4). 7 Reasons Why Students Drop Out of College. *U.S. University Directory*.

Statista (2018). Value of Debt Owned by Consumers in the United States as of September 2018. *Statista: The Statistics Portal*. Retrieved from https://www.statista.com/statistics/500814/debt-owned-by-consumers-usa-by-type/

Student Life Research (2016). Student Life. *The University of Michigan*. Retrieved from https://docs.google.com/spreadsheets/d/1mcfum3duzsdijhbcz-_my0apsgn1de1unecx7r7qi8k/edit#gid=1565511833

Targamadze, V., & Bulajeva, T. (2018). New Generation Subculture Formation on the Crossing of Real and Virtual Space. *Journal of Multicultural Studies,* 39-56.

Zeitlinger, R. (2014, April 26). Poll: Are you Addicted to Your Mobile Device? *The Jersey Journal*. Retrieved from https://www.nj.com/hudson/voices/2014/04/poll_are_you_addicted_to_your.html