International Conference on Humanities, Social and Education Sciences
www.ihses.net April 21-24, 2022 Los Angeles, USA www.istes.org

An Examination of the Flipped Classroom Paradigm for Diverse Student Populations

Amany Habib
University of West Florida, School of Education, USA, https://orcid.org/0000-0003-4510-5386

Timothy E. Morse
University of West Florida, School of Education, USA, https://orcid.org/0000-0001-6917-500X

Abstract: This manuscript reports the results of two pilot studies that investigated the views of international cohorts of teacher educators regarding the efficacy of the flipped classroom paradigm in K-12 schools. A void in the literature addressed by each pilot study was the relevance of flipped classrooms to student subgroups requiring specialized instruction (e.g., students with disabilities). In the first study 107 teacher educators (58% response rate) from 38 countries completed a 12-item survey designed to determine their views on the efficacy of flipped classrooms. Respondents reported flipped classrooms are efficacious for elementary and secondary students, as well as those who are culturally and linguistically diverse – particularly with respect to teaching complex subjects (e.g., science). Conversely, respondents reported the paradigm is inappropriate for students with disabilities, and that noteworthy barriers (e.g., a digital divide) impede its use with students in impoverished rural communities. In the second study 104 teacher educators (61% response rate) from 33 countries completed a 10-item survey designed to determine their views about the appropriateness of the flipped classroom paradigm for students with learning and/or behavioral challenges. Both studies are a measure of the paradigm's face validity, particularly with respect to certain student subgroups.

Keywords: Flipped classroom, Diverse learners, Teacher Education, Culturally and linguistically diverse learners

Introduction

The flipped classroom paradigm refers to a protocol which has students complete activities at home for the purpose of learning new content followed by engagement in related application activities the next day at school. The activities completed at home involve tasks that have been traditionally completed during class time at school. Examples include students watching their teacher's lecture, completing assigned readings, or engaging with material online.

Habib, A., & Morse, T. E. (2022). An Examination of the Flipped Classroom Paradigm for Diverse Student Populations. In O. Noroozi & I. Sahin (Eds.), *Proceedings of IHSES 2022-- International Conference on Humanities, Social and Education Sciences* (pp. 1-17), Los Angeles, USA. ISTES Organization.

The application activities completed the next day at school, under a teacher's direction, would be tasks that typically have been assigned as homework (Findlay-Thompson & Mombourquette, 2014; McLean et al., 2016). The flipped classroom is a relatively new phenomenon whose origin has been traced to schools of nursing and engineering in higher education (Moore, 2016). Subsequently its use has been adopted by K-12 schools, and has spread internationally (Bishop & Verleger, 2013).

Most research about flipped classrooms has examined them in comparison to a traditional classroom model, focusing specifically on comparative learning outcomes and the preferences for one model or the other by key constituencies (DeSantis et al., 2015; Goodwin & Miller, 2013; McLean et al., 2016). Regarding comparative learning outcomes, mixed results have been reported across studies, with a few recent meta-analyses concluding that slightly better learning outcomes were realized with a flipped classroom model (Lag & Saele, 2019; Lo & Hew, 2017). Studies reporting student, staff, and parental preference data also have reported mixed results, including greater student satisfaction (Goodwin & Miller, 2013), a reduction in parental complaints (Green, 2012), and reports from teachers that they are able to focus on effective teaching strategies during class time (Bergmann & Sams, 2014) being associated with flipped classrooms. Yet, lower student satisfaction in classrooms that used flipped techniques as compared to those that used traditional techniques, has also been reported (DeSantis et al., 2015).

Considerations of these studies reveal two particular aspects warranting further research. One aspect is the characteristics of the students studied. With respect to students in higher education, reportedly most analyses of comparative learning outcomes in higher education have involved students in schools of medicine/healthcare (e.g., Gillette et al, 2018; Tan et al., 2017) and business schools (Jacbosen & Knetemann, 2017). Arguably, these students could be characterized as both highly capable and motivated (Bishop & Veleger, 2013), and who have ready access to technology equipment and online infrastructure. Thus, the characteristics of the samples of students studied calls into question the extent to which the results apply to a more diverse general student population – both in higher education and K-12 schools.

Regarding studies of K-12 students – which are far fewer in number – the studies have focused mostly on students in high school rather than elementary school. Furthermore, the data reported have not been disaggregated with respect to certain K-12 subgroups that have been the focus of other differential analyses of educational initiatives (Lo & Hew, 2017). Specifically, the K-12 flipped classroom studies have not disaggregated the data in terms of subgroups that exemplify the diversity in these schools, such as students who are culturally and linguistically diverse, manifest disabilities, or reside in impoverished rural communities.

A second aspect of the investigations of flipped classrooms that sets the occasion for further research is their sole reliance on outcome measures. The use of outcome measures results in questioning, through a retrospective approach, the reasons why favorable or unfavorable results were attained/realized. That is to say, studies of comparative learning outcomes are left asking why positive, negative, or no difference outcomes were realized.

An alternative, viable approach to investigating the utility of flipped classroom techniques would be one that is proactive, consisting of the identification of concerns about the use of flipped classroom techniques with certain subgroups of students - followed by the development of interventions intended to make the approach appropriate for these students, which would then the focus of a study. That is to say, even without the reporting of negative, disaggregated comparative learning outcome data, there may be pre-existing concerns about the appropriateness of the flipped classroom paradigm for certain subgroups. If these concerns were identified before the implementation of a flipped classroom paradigm, they might allow for the design of a flipped classroom model that would address them so that optimal learning outcomes would be realized (or at least these students would be accounted for).

The remainder of this manuscript reports on two pilot studies that were designed to solicit the views of separate international cohorts of teacher educators about the efficacy of flipped classroom techniques for select K-12 student subgroups: culturally and linguistically diverse students, students with disabilities, and students who live in impoverished rural communities. After reporting about the studies, the manuscript discusses the implications of the results with respect to the use of flipped classroom techniques with one subgroup: culturally and linguistically diverse students.

Method

Survey Distribution and Data Analysis

Two pilot studies were designed to solicit the views of international cohorts of teacher educators about the efficacy/utility of flipped classroom techniques for K-12 students. The respondents were randomly selected professionals who – in the previous year – had presented at an international conference that focused on research in education, and to others who served on an editorial board of several journals involved in empirical research in the field of teacher education. The response rate for Study 1's survey was 58% (107 out 185) while the response rate for Study 2's survey was 61% (107 out of 170).

In each study the specific survey items were designed for the purpose of soliciting information pertaining to a unique set of research questions posed. However, a similar protocol was followed to design and distribute both sets of surveys, as well as tabulate the results (Appendices A and B present the surveys and respondent data). Altogether, the surveys were designed to provide for an examination of a snapshot of current worldwide views and practices of those involved in teacher education from various countries with respect to the flipped classroom model, rather than provide a scientific random sample for analysis.

In other words, from the outset the surveys were set to be non-scientific, non-representative snapshots. As can be seen in tables 1-4, the number of responses by country is small. As a result, a statistical analysis of the data would not yield particularly valid or useful information. Instead, an analysis of the frequency of response to each item allows for some tentative conclusions and points to some possibilities for future research.

Table 1. Survey 1: List of Countries with Highest Numbers of Respondents

Country	Number of Respondents
Australia	5
China	9
Germany	4
Hong Kong	4
Israel	4
New Zealand	4
United Kingdom	5
Spain	4
Taiwan	6
United States	7
Total = 10	52

Table 2. Survey 1: List of Countries with 1-3 Respondents

Country	Number of Respondents
Brazil	3
Catalonia	1
Canada	3
Chile	2
Columbia	1
Denmark	1
Finland	3
France	1
Ghana	2
Ireland	2
Italy	1
Jamaica	1
Japan	3
Kuwait	2
Mexico	3
Netherlands	2
Philippines	2
Poland	1
Russia	3
Saudi Arabia	2
Singapore	1
South Africa	3
South Korea	3
Sweden	2
Tanzania	1
Thailand	1
Turkey	3
Vietnam	2
Total = 28	55

Table 3. Survey 2: Number of Respondents by Country with the Most Participants

Country	Number of Participants
Australia	6
Brazil	4
China	7
Hong Kong	5
Israel	5
Jamaica	4
New Zealand	5
Russia	4
United Kingdom	7
South Korea	4
Taiwan	7
United States	4
Total = 12	62

Table 4. Survey 2: Number of Respondents by Country with the Least Participants

Country	**Number of Participants**
Argentina	1
Canada	2
Chile	2
Columbia	1
Denmark	1
Germany	3
Ghana	2
Guyana	3
Italy	2
Kuwait	3
Netherlands	2
New Guinea	1
Philippines	1
Poland	1
Singapore	2
South Africa	3
Sweden	2
Tanzania	3
Thailand	1
Turkey	3
Vietnam	3
Total = 21	42

With respect to tabulating the results, only the total number of responses per question were reported. Some questions allowed for multiple responses so, in some cases, the responses exceeded the number of respondents.

Survey Design and Content

Each survey's items were designed by one of this manuscript's authors, and were intended to reflect many of the findings and issues identified in previous studies, particularly those by DeLozier and Rhodes (2017), Habib et al. (2018), and Lo and Hew (2017). Draft items were developed and then reviewed by fellow university faculty for content, question clarity, and possible answers. Afterwards, the items were distributed to the international cohorts of teacher educators described previously.

A key feature of each survey was the inclusion of questions pertaining to student subgroups. These questions enabled both pilot studies to address an existing void in the flipped classroom research, which is the lack of disaggregated data pertaining to the impact of flipped classroom techniques on the performance of diverse student groups.

Appendix A consists of the 12-item survey from Study 1, which was designed to address general issues that included (a) the mixed results reported in previous studies about comparative learning outcomes and preferences for the flipped classroom paradigm, (b) concerns about the quality of some of the research/calls for more research (Delozier & Rhodes, 2017; Roteller & Cain, 2016), and (c) the lack of disaggregated data with respect to noteworthy K-12 student subgroups. Consequently, Study 1 was conducted for the purposes of addressing these concerns and to provide preliminary, foundational data to be used for more focused and extensive research.

The research questions posed were as follows:

1. Is there a consensus in the international professional community that the flipped classroom improves public school student learning and understanding of content?
2. What cautions and concerns exist in the international professional community in the use of the flipped classroom with students who are culturally and linguistically diverse, manifest disabilities, and/or reside in impoverished rural communities?

Appendix B presents the 10-item survey from Study 2. Study 2 focused on flipped classroom techniques with students with learning and behavioral challenges. The study addressed the respondents' beliefs (a) about the impact of flipped classrooms on teachers' workloads, (b) whether students with learning and behavioral challenges would be likely to complete home-based tasks for the purpose of learning new content, (c) the teacher educators' knowledge and training about flipped classrooms and how to meet the instructional needs of students with learning and behavioral challenges, and (d) the teacher educators' roles in preparing either general or special educators.

The research questions posed were as follows:

3. Do teacher educators believe that the flipped classroom is associated with increased teacher work?
4. Do teacher educators believe that students with disabilities derive additional benefits from the flipped classroom when compared to the traditional classroom?
5. Are teacher educators adequately prepared in the use of the flipped classroom to meet the instructional needs of students with serious learning and/or behavioral challenges?

Results and Discussion

Study 1 Results

In response to survey items 2-4 the majority of respondents indicated that their role as a teacher educator tasked them to prepare both elementary and secondary education teachers and that they had some or a great deal of knowledge about flipped classrooms as well as some or a great deal of experience in using or observing flipped classrooms. Responses to items 5-7 indicate the respondents' beliefs that most students prefer a combination of flipped and traditional classroom approaches, and that flipped and traditional classrooms are equally effective in improving the learning of elementary and secondary students.

In response to item 8, a slight majority of respondents reported that a flipped classroom would create a more effective learning environment than a traditional classroom for culturally and linguistically diverse students, whereas two-thirds of respondents reported that a flipped classroom does not create a more effective learning environment than a traditional classroom for students with disabilities. In a subsequent interview, a select group of respondents expressed similar concerns about flipped classrooms not creating a more effective learning environment than a traditional classroom with respect to students living in impoverished rural communities and cited reasons for their response that included limited access to technology items as well as concerns about internet connectivity and unreliable electricity (i.e., a digital divide/digital divide issues).

In response to item 9, respondents noted the biggest strength of flipped classrooms was that they were a better way to teach complex subjects and for item 12, those respondents who reported flipped techniques as being a more effective way of teaching subject area knowledge to elementary and secondary general education students identified science and social studies as the subject areas most conducive for using flipped techniques. However, it is important to note that in response to item 11, the majority of respondents reported that flipped classroom techniques were not a more effective way of teaching subject area knowledge to these students.

Study 1 Discussion

The fact that the majority of teacher educators were tasked to prepare both elementary and secondary teachers, and the respondents had a great deal or some knowledge about, and experience with using, flipped classrooms, adds to the validity of the findings. Like previous studies, mixed results were reported with respect to student preferences for flipped or traditional classrooms and these classrooms' comparative effects on improving learning.

The teacher educators' belief in the equal effectiveness of both traditional and flipped classrooms emphasizes a measured approach to school reform. That is to say, it appears these teacher educators see the flipped classroom as an avenue for school reform that builds upon what is working rather than as a wholesale replacement for a completely inept system.

Consideration of the respondents' mixed beliefs about the appropriateness of flipped classrooms for certain subgroups, as well as the strengths and weaknesses of flipped classroom techniques and which content areas are more suited to the techniques, raises two areas for investigation. One area is a need to identify the "feature match" between the types of students, flipped classroom techniques, and subject matter content that results in effective instruction. A second area is the identification of validated reasons why flipped classrooms turn out to be more appropriate for certain student subgroups (i.e., culturally and linguistically diverse) and not others (i.e., students with disabilities).

Study 2 Results

In response to items 1-3 the majority of respondents believed that flipped classroom techniques require more teacher instructional preparation but no more effort in grading student work or monitoring their performance. For items 4-6, the overwhelming majority of respondents believed that students with learning disabilities, serious emotional disturbance, and students who have serious academic deficits would not be likely to complete reading and instructional assignments at home. Yet, in response to item 7, nearly an equal number of respondents believed that there would be no difference between students with disabilities and their typically developing peers with respect to completing these tasks.

Items 8 and 9 addressed the qualifications of the respondents in terms of their training or knowledge on the use of flipped classroom techniques and how to meet the instructional needs of students with disabilities or serious academic deficits. The majority of respondents reported they had little or no training or knowledge of flipped classroom techniques whereas a majority of respondents indicated they had a great deal or some training or knowledge in how to meet the instructional needs of students with disabilities or serious academic deficits. Finally, the teacher educators reported that they were evenly split in terms of their primary instructional assignment regarding whether it was to train prospective special education teachers or general education teachers.

Study 2 Discussion

Responses to items 1-3 indicate that in instances in which flipped classroom techniques did not result in better comparative learning outcomes the flipped classroom model would be less efficient than a traditional model because teachers would be required to exert more effort without experiencing resulting improved student learning outcomes. Furthermore, respondents are clearly concerned about students not completing tasks at home. This

concern applied to students with disabilities, students exhibiting serious academic deficits that were not necessarily attributed to a disability, and typically developing peers.

This raises several questions regarding the practical implementation of flipped classroom techniques. One question is how would class proceed the next day. A practical implementation issue would be how schools would be structured to address students who come to school having completed assigned home-based tasks and students who had not. This circumstance might result in a bifurcated educational system that runs counter to efforts over the past 30 years to include all students in the general education classroom. A second question is what interventions could be employed to increase the probability home-based tasks would be completed.

Educators would have to differentiate which situations involve a "can't do" reason for not completing assignments and which involve a "won't do reason." Students with disabilities and serious academic deficits may not complete the assigned readings because they cannot due to low reading ability. The reason their typically developing peers may not complete the assignments is simply because they choose not to. Different interventions would be proper for these different circumstances.

It seems a representative sample of teacher educators preparing both general and special education teachers were included in the study, and that they were trained and knowledgeable about teaching students with disabilities. Yet, the exact opposite could be said regarding flipped classroom techniques. This calls into question the extent of the validity of the findings as well as a number of teacher education issues.

One is whether teacher educators would even broach this topic with their preservice teachers. Given that some evidence indicates teacher educators rely heavily on their personal experiences and beliefs (more so than published evidence) when deciding what to teach, it is fair to question whether their lack of belief in the bona fide implementation – and perhaps resulting efficacy - of flipped classroom techniques for students with disabilities would result in them not even addressing this topic in their preservice teacher education coursework. This outcome might be buttressed by these teacher educators' being challenged to figure out how to apply what they know about educating students with disabilities to a new (for them) flipped classroom paradigm.

Conclusion

The surveys report mixed results in that the flipped classroom was identified as being effective for some students whereas the traditional classroom was identified as being effective for others. Likewise, with respect to certain subgroups, flipped classroom techniques were reported to be effective for some and not others. Based on this data, future research should explore reasons why the flipped classroom is perceived to be appropriate or not appropriate. Afterwards, interventions could be developed for addressing either set of perceptions and then studied to assess their impact. The discussion that follows about culturally and linguistically diverse students serves as an example of how this tactic could proceed.

Implications for Student Subgroups: Culturally and Linguistically Diverse (CLD) Students

The flipped classroom paradigm is a relatively new method of instruction. This model of teaching involves a reverse of the teaching process that allows learners to rely on their own skills to evaluate and learn new information prior to attending class where the teacher devotes the majority of the time to application and practice. Although benefits of this model have been documented in various studies (see Alsowat, 2016; Du et al., 2014; Santikarn & Wichadee, 2018), it is not without its challenges for subgroups of learners who are culturally and linguistically diverse (CLD) (Turan & Akdag-Cimen, 2019). This paradigm can be effective with independent learners who have the skills needed to maneuver through new information, however, many CLD students require assistance with the new language that they may still be learning, therefore, prohibiting their ability to maneuver through new information on their own. This is simply due to the fact that learning a new language is a lengthy process that requires a great deal of time and practice. Knowing as much as possible about the students is key as individual characteristics of the learners must be taken into consideration (Chuang, Weng, & Chen, 2018).

The greatest advantage of the flipped classroom for CLD students is that the learners are able to review new materials at their own pace. Learners are able to rewind and re-watch new information which allows them to look up new words in the dictionary or if they were not able to comprehend information due to the fast pace of the speaker. These are important benefits for CLD students who often feel that they get left behind due to their ongoing language learning process or their lack of familiarity with information that require knowledge of a cultural concept with which they may not be familiar.

Recommendations

In the age of COVID-19 and the post-pandemic era, it seems like hybrid formats of teaching and learning are here to stay. If a flipped classroom paradigm or a version of a hybrid teaching model is used in inclusion classrooms, teachers must become aware of the various needs of diverse learners including exceptional students and culturally and linguistically diverse learners. Additional studies and evaluations of the effectiveness of such models with diverse learners is needed and the inclusion of such teaching paradigm must be considered within methods courses designed for teacher education programs.

References

Alsowat, H. (2016). An EFL flipped classroom teaching model: effects on English language higher-order thinking skills, student engagement and satisfaction. *Journal of education and practice*, *7*(9), 108–121.

Bergmann, J. & Sams, A. (2014). Flipped learning: Gateway to student engagement. *Learning & Leading with Technology*, *41*(7), 18-23.

Bishop, J. L. & Verleger, M. A. (2013). The flipped classroom: A survey of the research. Paper presented at the 120th ASEE Annual Conference & Exposition. Atlanta, GA. Paper #6219.

Chuang, H.H., Weng, C.Y., & Chen, C.H. (2018). Which students benefit most from a flipped classroom approach to language learning? *British Journal of Educational Technology*, *49*(1), 56–68.

DeLozier, S. J., & Rhodes, M. G. (2017). Flipped classrooms: A review of key ideas and recommendations for practice. *Educational; Psychology Review*, *29*, 141-15

DeSantis, J., Van Curen, R., Putsch, J., & Metzger, J. (2015). Do students learn more from a flip? An exploration of the efficacy of flipped and traditional lessons. *Journal of Interactive Learning Research, 26*(1), 39–63.

Du, S., Fu, Z. & Wang, Y. (2014). The Flipped Classroom–Advantages and Challenges. International Conference on Economic Management and Trade Cooperation,17-20. doi:10.2991/emtc-14.2014.3

Findlay-Thompson, S., & Mombourquette, P. (2014). Evaluation of a flipped classroom in an undergraduate business course. *Business Education and Accreditation, 6*, 63–71.

Gillette, C., Rudolph, M., Kimble, C., Rockich-Winston, N., Smith, L., & Broedel-Zaugg, K. (2018). A meta-analysis of outcomes comparing flipped classroom and lecture. *Journal of Pharmaceutical Education*, *82*, 433-440.

Goodwin, B., & Miller, K. (2013). Research says evidence on flipped classrooms is still coming. *Educational Leadership*, *70*(6), 78-80.

Gr**e**en, G. (2012). *The flipped classroom and school approach: Clintondale High School* [Paper presentation]. Annual Building Learning Communities Education Conference, Boston, MA, United States.

Habib, A., Evans, W., Hornby, G., Pilgrim, M. (2018). *The flipped classroom: Is it leaving children with special needs and those in rural and impoverished areas behind* [Unpublished manuscript]. Department of Teacher Education and Educational Leadership, University of West Florida.

Jacobsen, K. V., & Knetemann, M. (2017). Putting structure to flipped classrooms using team-based learning. *International Journal of Teaching and Learning in Higher Education*, *29*(1), 177-185.

Lag, T., & Saele, R. G. (2019). Does the flipped classroom improve student learning and satisfaction? A systematic review and meta-analysis. *AERA Open*, *5*(3), 1-17. doi: 10.1177/2332858419870489

Lo, C. K., & Hew, K. H. (2017). A critical review of flipped classroom challenges in K-12 education: Possible solutions and recommendations for future research. *Research and Practice in Technology Enhanced Learning*, *12*(4), 1- 22.

McLean, S., Attardi, S., Faden, L., & Goldszmidt, M. (2016). Flipped classrooms and student learning: Not just surface gains. *American Physiological Society*, *40*, 47 – 55. doi: 10.1152/advan.00098.2015

Moore, M. G. (2016). Flipped classrooms, study centers andragogy and independent learning. *The American Journal of Distance Education*, *30*(2), 65–67. doi: 10.1080/08923647.2016.1168637

Roteller, C. & Cain, J. (2016). Research, perspectives and recommendations on implementing the flipped classroom. *American Journal of Pharmaceutical Education*, March 25:*0(2):34, doi: 10.5688/ajpe80234.

Santikarn, B., Wichadee, S. (2018). Flipping the classroom for English language learners: A study of learning performance and perceptions. iJET, 13(9), 123–135. doi: 10.3991/ijet.v13i09.7792

Tan, C., Yue, W.-G., & Fu, Y. (2017). Effectiveness of flipped classrooms in nursing education: Systematic review and meta-analysis. *Chinese Nursing Research*, *4*, 192-200. doi: 10.1016/j.cnre.2017.10.006

Turan, Z., & Göktaş, Y. (2018). Innovative redesign of teacher education ICT courses: How flipped classrooms impact motivation? *Journal of Education and Future*, *13*, 133–144.

Appendix A. Survey of an International Cohort of Teacher Educators' Views Regarding the Efficacy of Flipped Classrooms

1. In what country do you work? Responses are represented in tables 1 and 2.

2. Are you involved with the education of teachers in:	Number of Responses
A. Elementary	24
B. Secondary	25
C. Elementary/Secondary	57

3. How would you rate your knowledge of the 'flipped' classroom?

A. Great deal of knowledge	35
B. Some knowledge	41
C. Little knowledge	17
D. No knowledge	12

4. How much experience do you have in using or observing the use of 'flipped' techniques in school classrooms?

A. A great deal of experience	24
B. Some experience	44
C. Little experience	27
D. No experience	10

5. In your experience, most students prefer?

A The traditional classroom	25
B. The flipped classroom	29
C. A combination of 'flipped' and traditional approaches	53

6. In your opinion, which format is generally most effective in improving learning in elementary students?

A Traditional techniques are more effective than 'flipped' techniques	23
B. 'Flipped' techniques are more effective than traditional techniques	33
C. Traditional and 'flipped' techniques are equally effective	51

	Number of Responses
7. In your opinion, which format is generally most effective in improving learning in secondary students?	
A Traditional techniques are more effective than 'flipped' techniques	28
B. 'Flipped' techniques are more effective than traditional techniques	33
C. Traditional and 'flipped' techniques are equally effective	46
8. In your opinion, does the 'flipped' classroom create a more effective learning environment than the traditional classroom for content area teaching of students who are culturally and linguistically diverse and students with special needs? Mark all that apply	
A. Yes, for learners who are culturally and linguistically diverse	56
B. No, for learners who are culturally and linguistically diverse	49
C. Yes, for students with special needs	37
D. No, for students with special needs	70
9. In your opinion, what is the biggest strength of the 'flipped' classroom? Mark all that apply	
A. Prior activities and reading enhance in class activities	47
B. Increases teamwork skills	19
C. Better opportunity to apply knowledge	47
D. Better way to teach complex subjects	62
10. In your opinion, what is the biggest weakness of the 'flipped' classroom? Mark all that apply	
A. Students not watching the videos or reading the material before class	54
B. Videos and activities that are not related to the focus of the lesson	33
C. Access to video technology at home is not known	30
D. Teacher time spent filming or making videos	48
11. In your opinion, with general education elementary and secondary students, are 'flipped' techniques a more effective way of teaching subject area knowledge than traditional techniques?	
A. Yes	47
B. No	59

12. If your answer to the previous question was 'Yes" then which subject areas are most conducive for using 'flipped' instructional techniques? Mark all that apply.	Number of Responses
A Math	19
B. Science	39
C. Reading	14
D. Language Arts	16
E. Social Studies	33

Appendix B. Survey of Teacher Trainers' Opinions About the use of the Flipped Classroom with K-12 Students who have Serious Learning and/or Behavioral Challenges

(Survey questions and percentage of responses for each question: N=104)

1. Do "flipped" classroom instructional techniques require more work from the teacher than traditional instructional techniques in terms of preparation of instruction?

A. Yes - 67%

B. No - 33%

2. Do "flipped" classroom instructional techniques require more work from the teacher than traditional instructional techniques in terms of grading?

A. Yes - 26%

B. No – 77%

3. Do "flipped" classroom instructional techniques require more work from the teacher than traditional instructional techniques in terms of monitoring student performance?

A. Yes - 27%

B. No - 73%

4. In your opinion, how likely is it that a majority of students who are learning disabled will complete reading and instructional assignments prior to a class meeting?

A. Very likely - 32%

B. Not very likely - 68%

5. In your opinion, how likely is it that a majority of students who have serious emotional and behavior problems will complete reading and instructional assignments prior to a class meeting?

A. Very likely - 19%

B. Not very likely - 81%

6. In your opinion, how likely is it that a majority of students who have serious academic deficits will complete reading and instructional assignments prior to a class meeting?

A. Very likely - 9%

B. Not very likely - 91%

7. In your opinion, which of these statements is most true:

A. A majority of children with special needs are more likely than their more normal peers to NOT complete reading and instructional assignments prior to a class meeting? - 44%

B. A majority of children with special needs are more likely than their more normal peers to complete reading and instructional assignments prior to a class meeting? - 13%

C. There is no difference between the percentage of children with special needs and their more normal peers in completing reading and instructional assignments prior to a class meeting? - 42%

8. In your opinion, how much training or knowledge do teacher education faculty members in your institution have in using "flipped " classroom instructional techniques?

A. A great deal of training or knowledge - 10%
B. Some training or knowledge - 33%
C. Little training or knowledge - 26%
D. No training or knowledge - 31%

9. In your opinion, how much training or knowledge do teacher education faculty members in your institution have in meeting the instructional needs of children with severe academic deficits or special needs?

A. A great deal of training or knowledge - 13%
B. Some training or knowledge - 46%
C. Little training or knowledge - 30%
D. No training or knowledge - 10%

10. What is your primary assignment in the teaching of teacher education classes?

A. Special Education - 26%
B. General Education - 47%
C. Equally Split between general and special education – 27%