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Research Article

A Project-based Approach to Examine University Teachers' Attitudes towards Visually Impaired Students

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Abstract

A case study was conducted that included an interview of a visually impaired (VIP) psychology student and a survey of teachers' attitudes towards VIP students. A project-based approach was utilized to teach statistics to the VIP student. A survey to examine teachers' attitudes towards the VIP student was prepared as part of a course assignment. This study utilized a mixed-method approach integrating qualitative and quantitative research. Data from 64 faculty members was collected via survey. The results of the study revealed that 33% of the teachers had positive attitudes toward VIP students. Factor analysis indicated that teachers' attitude has three components explaining 52% of the total variance: 1- Teacher's confidence to teach the visually impaired, 2- Lesson impact due to the presence of the visually impaired in a regular classroom, and 3- the recognition of the visually impaired contribution to the enrichment of the classroom experience. These factors seem to indicate that experience with teaching the visually impaired enhance teacher's confidence to teach the visually impaired and recognition of the visually impaired contribution. Obtained results show significant difference with respect to teachers' confidence (p-value 0.005) in their ability to effectively teach the VIP. There was also a significant difference in the perception of the VIP contribution to benefit the entire class (p-value 0.024). However, the belief that teachers had to alter the lesson plan because of the presence of the VIP student in class was not significant. Most teachers had varying views and preconceived misconceptions about teaching the visually impaired and claimed the major challenge would be to describe visuals. The study concluded that positive attitude of teachers towards the visually impaired was dependent on whether or not they had previous exposure to visually impaired people. Moreover, this study supports the claim that inclusive education with the necessary resources, and supportive teachers may contribute to the visually impaired students' academic success. The study led to relevant teaching model suggestions for VIP students towards inclusive education.

Introduction

Students with visual impairment have educational needs that are unique and mostly met through a combination of efforts by parents, professional and students. It is a long-held position that subjects involving visual arts, mathematics and science offer instructional challenges in mainstreaming the visually impaired student [1] report that achievements in mathematics by visually impaired students tend to be below their performance in other academic subjects. However, [2] suggests that training for teachers and supportive materials improve mainstreaming and levels of higher education available to the VIP. In order to meet their unique needs, it is important to provide VI students with specialized services and materials such as proper media and books [3] These are tools that are important in enabling them to compete with their peers and take part in various roles of society[3]. It is important that the education sector comes up with a full range of options and programs in which the service providers can create an appropriate environment for each visually impaired student The California Education Code recognizes there is no adequate technology to translate complex mathematical concepts for the profoundly blind. Therefore, a human helper is the best way to create equal access. Instructors need to verbalize everything they write and be precise with their language. Not only can the visually impaired student create a graph and draw geometric constructions, with the right tools; they can often benefit non-disable students [4] It is very important for all students to use as many senses as possible when learning and the inclusion of the visually impaired student in a regular classroom is beneficial to sighted students. A study of around 1,000 primary school students in the United States state of Indiana found positive impacts of inclusion on the progress of non-disabled students in mathematics[5] .

The National Federation of the Blind (NFB) stated, "The real problem of blindness is not the lack of eyesight. The real problem is the misunderstanding and lack of information which exist. If a blind person has proper training and opportunity, blindness is only a physical nuisance" (1999). Furthermore, recently at the NFB website it is posted: "Every day we raise the expectation of the blind people, because low expectations create obstacles between the blind and our dreams" (2017). In fact, the inclusion of the VIP in a regular classroom would enrich the experience of the sighted students helping diversify perspectives and knowledge by promoting access to explore different senses that would not be taken into consideration in a regular classroom. Besides examining teachers' attitudes towards the visually impaired student and demonstrating the value of a project-based approach, this paper aims to raise awareness of teaching challenges and the VIP contribution to the classroom as they increasingly become students in general education. This paper argues that mainstreaming is beneficial to the visually impaired student as well as the entire class in an inquiry-based environment. [6] suggests that students with disabilities seem to thrive in inquiry-oriented learning environments. The paper promotes inclusive education involving project-based assignments. This form of assignment brings real world problems to the classroom that may be an important factor in guaranteeing the success and acceptance of the visually impaired. The emphasis of creating an opportunity to employ personal knowledge facilitates meaningfulness of the content material. This done by active participation and exploration, building a teaching model based on students' prior experiences and knowledge [7].

In addition, teachers as well as the students' positive attitudes towards inclusion and expectations may provide higher level of academic success. Indeed, [8] reports that teachers' positive attitude towards students with special needs increases self-perception and academic performance. Dubis (1987) surveyed 373 special education teachers' attitudes toward student blindness and identified positive attitudes in general. According to Magdalena, in order to teach statistics to a VIP student three conditions have to be met: 1- an individual approach towards the student, 2- adaptation of didactic materials, and 3-availability of special software such as SPSS (JAWS -Job Access With Speech). The key element of the Americans with Disability Act and Rehabilitation Act of 1973 is creating equal access to people with disabilities. This means to create an environment that will allow an increase in the numbers of pupils that enter higher education. According to research by [9] access is an important element when it comes to inclusion, and inclusion in this context is defined to be more than placement of the special student in a certain setting. When a student with visual impairment is placed in a regular classroom, in a facility that provides access, it does not necessary mean that the student will feel included [9] Students with visual impairment will only be included once their specific and unique educational needs for access are met. This requires the assistance of personnel that are specifically trained for that purpose in a case by case basis.

Methodology

The teaching model approach of this study to serve the visually impaired student, was based on project-based learning in an inquiry-based framework. The assignment was selected considering the student's motivation and knowledge complying with his personal experience. The assignment included dialectical discussions involving other students and instructors by use of brainstorming sessions. This was an appealing strategy because, instead of reading and or hearing concepts, the student actually used the field of study of his interest to solve real world problems. In this sense, the project-based approach was a powerful tool especially for the visually impaired student as it provided an opportunity for strengthening interactions and contribution with other students and faculty. Because it is important to offer equal opportunity to all learners in the formal education system, it is vital to offer equal opportunities to people with visual impairment in order to ensure that they are able to participate just like any other student in the formal education sector. However, it is imperative to understand how the influence of instructors' attitudes towards students with visually impairment and the associated preparedness of the instructor impact the visually impaired student learning outcomes. The study utilized a mixed-method approach integrating qualitative and quantitative research. The study was conducted online, and participants were provided with the address for the survey monkey website to complete the questionnaire at a time that was convenient for them. The survey was launched on December 1st 2014 and results were compiled on January 14th, 2015. All faculty members of Woodbury University were selected to participate in the study, a total of 120 members. However only 64 faculty chose to participate. The name of participants was not disclosed to protect their confidentiality, but their age, years teaching and exposure to visually impaired people were recorded.

The instrument was created as a group-activity using student peer participation and input from two professors. The questionnaire sought to obtain the following information by dichotomous variables to identify teacher's age, years of teaching, experience teaching visually impaired students and previous interaction with visually impaired people. This was followed by Likert-scale type questions as described in Table 1. At the end of the survey, six open-ended questions were included. They were intended to encourage respondents to give more information and express themselves. This was done in an effort to reveal attitudes, opinions and beliefs. The following open-ended six questions were analyzed:

I. What is your opinion of a visually impaired person in terms of contributing effectively in the workplace?

II. The office of student development contacts you to let you know that you have a VIP student in one of your courses next semester. How would that affect your lesson plan? (Refer to learning outcomes and lesson plan alterations).

III. Do you think you are prepared to teach a VIP student?

IV. What do you think the challenges would be to teach a visually impaired student?

V. What are your expectations from the VIP student in terms of participation in class?

VI. Do you think VIP student should be included in regular classes?

Results and Discussion

The histogram of the Likert scale total mean distribution seems slightly above neutrality. However 22% of the faculty members interviewed had previous exposure to visually impaired people. The distribution paneled by having or not having past teaching experience of visually impaired students seems to indicate a difference in the distribution with a shift towards higher scores for those faculty that indicated previous experience with visually impaired students (Figure 1). Two outliers were identified and carefully analyzed. They have answered many statements with N/A and were found impractical to the study and were eliminated.

Table 1 displays descriptive statistics of the Likert scale for corresponding scores of the 64 faculty participants, including the percentage distribution of responses, mean per statement, and the last column showing the correlation (ri-t) of all faculty responses between the score of each individual statement and their overall mean score for all 20 statements (Item-total correlations). This correlation helps to evaluate how well the statement performed in comparison to other statements. Most correlation values were above 0.3 except statements Q10, Q14 and QF20 that had negative values. Considering the rule that correlations between 0.2 and 0.39 indicate good discrimination and for values above 0.4 indicate very good discrimination, Table 1 indicates that 65% of the statements have positive above 0.4 values implying a very good discrimination, and 20% of statements between 0.3 and 0.4 implying good discrimination. Generally negative values as encountered on statements Q10, Q14 and Q20 are unexpected because participants that have high scores on the questions should have high scores overall. However, this may also indicate a mis-keyed statement or that the statement was ambiguous and confusing to participants.

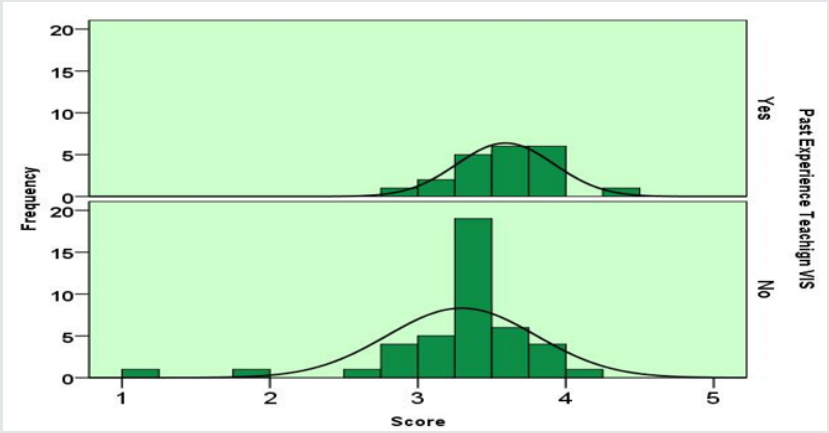

Figure 1: Distribution Score of Teachers with and without past experience with Visually Impaired Students.

Table 1: Likert-scale statements named by Q1-20. Scores are represented accordingly.

	Statement Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A	Item Mean Score	ri-t
Q1	I feel confident that I will be able to teach a VIP student	5(25.8%)	4(37.1%)	3(14.5%)	2(14.5%)	1(4.8%)	0(3.2%)	3.61	0.62
Q2	Blindness is tragically a disabling condition that negatively will impact academic success	1(1.6%)	2(3.1%)	3(10.9%)	4(40.6%)	5(40.6%)	0(1.6%)	4.19	0.66
Q3	I am concerned that the presence of VIS will impact the class progress because visual activities have to be avoided	1(0%0	2(9.4%)	3(18.8%)	4(40.6%)	5(23.4%)	0(7.8%)	3.85	0.67
Q4	It would be difficult to alter my lesson plan involving visual information if I have a VIP student in my regular class.	1(4.7%)	2(21.9%)	3(23.4%)	4(25%)	5(20.3%)	0(4.7%)	3.36	0.61
Q5	I feel uneasy when I have to talk to a VIP student	1(1.6%)	2(0%)	3(7.8%)	4(28.1%)	5(59.4%)	0(1.6%)	4.48	0.30
Q6	If I have a VIP student in my class, I would not slow down the class so other students do not get bored.	1(3.1%)	2(34.4%)	3(23.4%)	4(15.6%)	5(12.5%)	0(7.8%)	3.00	0.40

Q7	I believe that having a VIP student in my regular class will affect negatively other students.	1(0%)	2(1.6%)	3(4.7%)	4(35.9%)	5(50%)	0(3.1%)	4.46	0.67
Q8	The extra attention VIP student require will be to the detriment of other students.	1(1.6%)	2(1.6%)	3(6.3%)	4(39.1%)	5(45.3%)	0(1.6%)	4.33	0.72
Q9	I believe VIP student have a good imagination that makes them understand the main point quickly.	5(9.4%)	4(12.5%)	3(51.6%)	2(6.3%)	1(3.1%)	0(15.6%)	3.23	0.37
Q10	I believe that if I have a VIP student in my class, I will have to put more effort to have extra teaching materials.	5(10.9%)	4(56.3%)	3(7.8%)	2(14.1%)	1(7.8%)	0(3.15)	3.50	-0.25
Q11	I believe that the presence of VIP student in a regular class enhances learning experiences for other students.	5(25%)	4(34.4%)	3(34.4%)	2(4.7%)	1(0%)	0(1.6%)	3.81	0.45
Q12	I think VIP student have a hard time to adapt themselves in a regular class.	1(0%)	2(7.8%)	3(43.8%)	4(23.4%)	5(14.1%)	0(9.4%)	3.49	0.64
Q13	I think VIP student need extra time to study and do their test then the sighted student.	5(4.7%)	4(25%)	3(32.8%)	2(20.3%)	1(4.7%)	0(10.9%)	3.02	0.39
Q14	I believe VIP student require special materials to make them learn effectively	5(7.8%)	4(53.1%)	3(23.4%)	2(6.3%)	1(3.1%)	0(6.3%)	3.60	-0.16
Q15	I believe VIP student have a hard time learning math and writing.	1(0%)	2(0%)	3(29.7%)	4(25%)	5(34.4%)	0(9.4%)	4.05	0.49
Q16	I would treat my VIP student as any other student in class.	5(18.8%)	4(37.5%)	3(18.8%)	2(18.8%)	1(0%)	0(4.7%)	3.60	0.42
Q17	I would not show videos in the class because VIP student would not be able to catch up with the information.	1(0%)	2(3.1%)	3(15.6%)	4(51.6%)	5(21.9%)	0(6.3%)	4.00	0.29
Q18	I believe VIP student usually lacks study skills.	1(0%)	2(0%)	3(9.4%)	4(18.8%)	5(67.2%)	0(3.1%)	4.61	0.55
Q19	I feel that I don't want to teach VIP student because it requires more effort.	1(0%)	2(4.7%)	3(12.5%)	4(25%)	5(53.1%)	0(3.1%)	4.33	0.54
Q20	I believe that I need to attend special training to teach VIP student.	5(9.4%)	4(45.3%)	3(25%)	2(14.1%)	1(4.7%)	0(1.6%)	3.41	-0.14

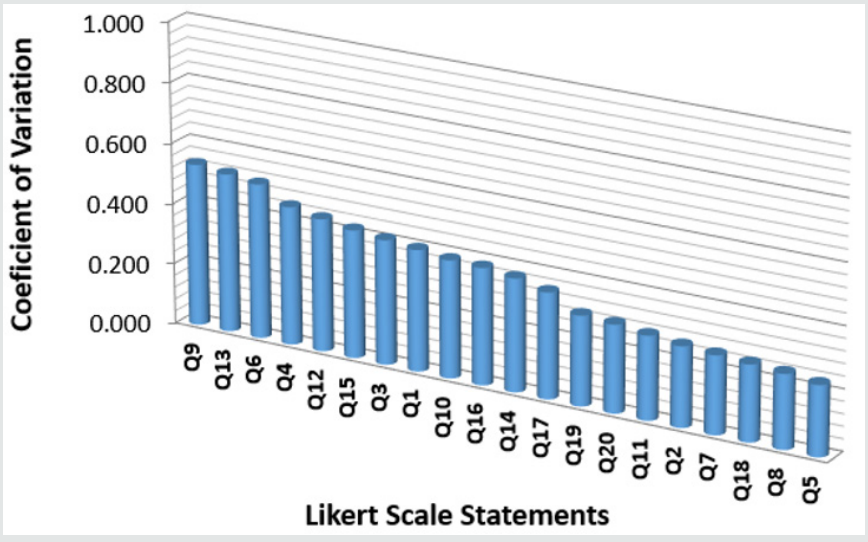

Figure 2: Coefficient of Variation from Likert Scale Statements.

Forty percent (40%) of the Likert scale statements score a mean of 4 and above. The percentage distribution for the responses to each of the 20 statements shown in Table 1 indicate that faculty, overall, responded with a positive attitude towards the teaching experience of a visually impaired student. This was especially true for the statements with higher scores and item-total correlations such as Q7 (I believe that having a VIP student in my regular class will affect negatively other students) and Q8 (The extra attention VIP student require will be to the detriment of other students). In contrast to neutral statements Q6 (If I have a VIP student in my class, I would not slow down the class so other students do not get bored) and Q13 (I think VIP student need extra time to study and do their test then the sighted student) were evenly distributed (Figure 2).

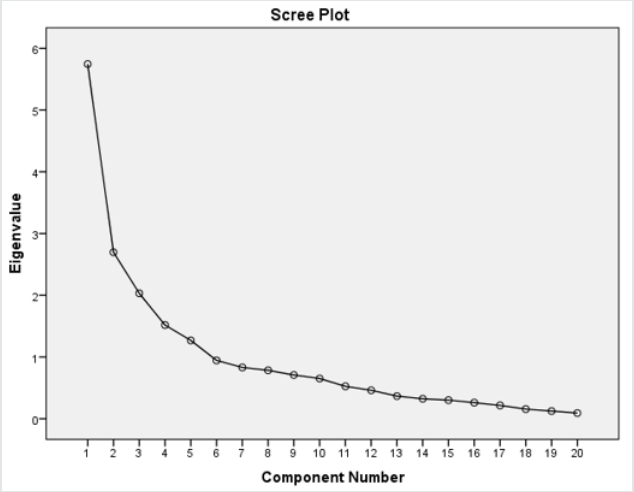

Figure 3: Scree Plot.

The lowest item mean scores were obtained by the statements Q6 (If I have a VIP student in my class, I would not slow down the class so other students do not get bored), Q9 (I believe that VIP student have good imagination that makes them understand the main point quickly) and Q13 (I think VIP student need extra time to study and to do their test then the normal student) indicating most faculty believe that VIP student will slow down the class and they will need more time to learn. These statements have also the highest coefficients of variation as shown in Figure 3 indicating high variability. The coefficient of variation (CV) is defined as the ratio of the standard deviation by the mean to measure relative variation of the data. Higher values mean higher variability. Another possible explanation for lowest item mean score and higher coefficient of variation is that many respondents that had no past experience with VIP people selected N/A, avoiding a response to the statement. This may be evidence of bias disability, refusing to admit that they believe that VIS do not have a good imagination. This may indicate that faculty with no experience teaching visually impaired students have a negative attitude towards the VIP student because they believe the presence of a VIP student would require the class to slow down and would impact negatively the class by having other students bored. In contrast the following statements have the lowest variability and highest scores: Q5 (I feel uneasy when I have to talk with a VIP student), Q18 (I believe the VIS lacks study skills) and Q8 (The extra attention VIP student require will be to the detriment of other students.) show a positive attitude towards teachers confidence to approach the VIS, student's sufficient study skills, as well as the enrichment to the class experience by pointing to the fact the blindness is not an impairment to academic success Figure 4.

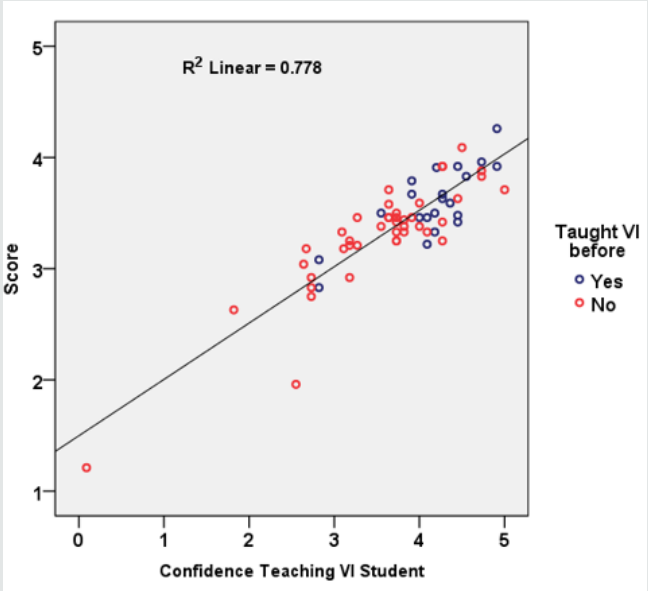

Figure 4: Scree Plot.

Independent t-tests were performed for all statements in regard to faculty with and without past experience with visually impaired people. Nine of the statements indicated a significant difference between faculty attitude towards teaching the VIP student as shown in Tables 2 & 3. The results of independent t-test revealed that teachers with teaching VIP experience generally had positive attitudes toward VIP students with respect to statements Q1, Q2, Q3, Q4, Q6, Q7, Q9, Q17, and Q20 showed significant difference between teachers with and without past experience teaching the visually impaired. It seems that most significant differences between teachers with and without past experience teaching the VIP student are related to confidence in the teacher's ability to teach the visually impaired, the belief that the inclusion of the VIP student in a regular class will affect negatively the progress, the difficulty to alter lesson plan and the abilities of the VIS to understand the main point of the lesson. It is interesting to note that statement Q20 (I believe that I need to attend special training to teach VIP student) referring to training had low a score for those teachers with previous experience with VIP student. It is in contrast to those teachers that did not have experience with the VIP and admitted that they do need training. Training and having previous experience teaching the VIP student were identified as influential factors regarding positive teachers' attitude. Because the survey is based on a Likert scale generating ordinal data, with categorical independent data and independence of observations of a non-normal distribution, it was advisable to test Mann-Whitney U Wilcoxon for independence, as shown in Table 4. Results show significant difference for the

same statements as observed by independent t-test indicating internal consistence reliability. Cronbach's alpha value, associated with all 20 statements scores, indicates a respectable 0.830, as shown in Table 5, suggesting that the items have good internal consistency. Consequently, the high Cronbach's alpha value means it is justifiable to interpret the 20 items' scores as an aggregated, according to the level of reliability criteria provided by [10] , described in Table 6. The set of 20 statements provides internal consistency and deleting any statement will have a negligible impact on the alpha, as described in last column of Table 7 (Item-total Cronbach's statistics). Statement Q20, if removed, would slightly improve Cronbach's coefficient to 0.843. In addition, it is the only statement to indicate negative item-total correlation possibly because this statement had lower scores for faculty with VIS teaching experience than for the without as was shown in Table 2. In addition, in Table 8, for Cronbach's Alpha Inter –total correlation, statement Q20 shows a negative correlation. A possible cause for the negative correlation could be that a higher score was attributed to those that agree to have training to better attend the needs of the VIP student. Most faculty that did not have experience teaching the VIP strongly agree that training would be necessary. This demonstrates their interest in improving teaching skills, while teachers with past experience stated that they did not need training, thus lowering their scores. For the purpose of correlation analysis, color-coded data was utilized according to the rule of thumb defined by [11] categorization (Table 8). According to Table 9 30% of the correlation were in the weak category represented by the orange color, followed by 19% moderate strength of correlation represented in blue. Only one correlation was strong, given in yellow. Its value was 0.749 correlation between Q7 and Q8. This result was observed possibly because both statements have similar meaning [11-14]. It shows most of the respondents strongly disagree that the VIP student will affect negatively other students because of instructor's extra attention to the VIP student. Represented in pink are 18% of the negative correlations. Table 9 indicates that most negative correlations are obtained for statement Q20. A possible cause for the negative correlation could be that a higher score was attributed to those that agree to have training to better attend the needs of the VIS. Most faculty that did not have experience teaching strongly agree that training would be necessary, demonstrating interest in improving their teaching skills. In addition, the fact that some faculty responded N/A to some statements - at most 15.6% of respondents for statement Q9, may be a possible cause for the negative correlation. Moreover, taking into consideration that this exploratory study has a relatively small sample size, as the data is strongly affected by a few respondents, may also have contributed for negative correlations. The fact that many other items showed a positive association, above 0.20 (50% of the cases), and that Cronbach's alpha is 0.830 indicates an acceptable internal consistency. While 0.830 indicates good internal consistency, it does not mean that the scale is unidimensional. In order to determine dimensionality, a scaled factor analysis was performed [14-19].

Table 2: Descriptive statistics of statements.

Group Statistics

	Past	N	Mean	Std. Deviation	Std. Error Mean
Q1	Yes	21	4.29	0.784	0.171
	No	40	3.18	1.412	0.223
Q2	Yes	21	4.52	0.602	0.131
	No	41	3.93	1.149	0.179
Q3	Yes	21	4.29	0.561	0.122
	No	42	3.17	1.513	0.233
Q4	Yes	21	3.71	1.146	0.25
	No	42	2.95	1.431	0.221
Q5	Yes	21	4.57	0.598	0.13
	No	41	4.34	1.109	0.173
Q6	Yes	21	3.29	1.271	0.277
	No	40	2.48	1.358	0.215
Q7	Yes	20	4.75	0.55	0.123
	No	40	4.1	1.172	0.185
Q8	Yes	21	4.52	0.75	0.164
	No	40	4.13	1.067	0.169
Q9	Yes	21	3.24	1.338	0.292
	No	41	2.44	1.45	0.226
Q10	Yes	21	3.29	1.231	0.269
	No	42	3.45	1.31	0.202
Q11	Yes	21	3.9	0.944	0.206
	No	42	3.69	1.024	0.158
Q12	Yes	21	3.57	1.248	0.272
	No	41	2.95	1.341	0.209
Q13	Yes	21	2.76	1.136	0.248
	No	41	2.68	1.457	0.227
Q14	Yes	21	3.57	1.165	0.254
	No	42	3.29	1.255	0.194
Q15	Yes	21	3.71	1.454	0.317
	No	41	3.73	1.361	0.212
Q16	Yes	21	3.81	1.123	0.245
	No	41	3.24	1.319	0.206
Q17	Yes	21	4.24	0.539	0.118
	No	41	3.49	1.399	0.218
Q18	Yes	21	4.38	1.203	0.263
	No	41	4.51	0.978	0.153
Q19	Yes	21	4.48	0.873	0.19
	No	41	4.05	1.284	0.2
Q20	Yes	21	2.95	1.203	0.263
	No	42	3.55	0.993	0.153

Table 3: Independent t-test of statements comparing faculty with and without past experience teaching VIS

Independent Samples Test										
		Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval	
		F	Sig.	t	df	(2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Q1	Equal variances assumed	9.542	0.003	3.336	59	0.001	1.111	0.333	0.445	1.777
	Equal variances not assumed			3.949	59	0.000	1.111	0.281	0.548	1.674
Q2	Equal variances assumed	1.852	0.179	2.224	60	0.030	0.597	0.268	0.060	1.134
	Equal variances not assumed			2.685	60	0.009	0.597	0.222	0.152	1.042
Q3	Equal variances assumed	11.135	0.001	3.268	61	0.002	1.119	0.342	0.434	1.804
	Equal variances not assumed			4.246	58	0.000	1.119	0.264	0.591	1.647
Q4	Equal variances assumed	2.668	0.108	2.121	61	0.038	0.762	0.359	0.044	1.480
	Equal variances not assumed			2.284	49	0.027	0.762	0.334	0.091	1.432
Q5	Equal variances assumed	2.577	0.114	0.884	60	0.380	0.230	0.260	-0.290	0.750
	Equal variances not assumed			1.061	60	0.293	0.230	0.217	-0.204	0.664
Q6	Equal variances assumed	0.006	0.938	2.263	59	0.027	0.811	0.358	0.094	1.528
	Equal variances not assumed			2.312	43	0.026	0.811	0.351	0.104	1.518
Q7	Equal variances assumed	2.236	0.140	2.346	58	0.022	0.650	0.277	0.095	1.205
	Equal variances not assumed			2.922	58	0.005	0.650	0.222	0.205	1.095
Q8	Equal variances assumed	0.345	0.559	1.524	59	0.133	0.399	0.262	-0.125	0.922
	Equal variances not assumed			1.697	54	0.095	0.399	0.235	-0.072	0.870
Q9	Equal variances assumed	1.499	0.226	2.106	60	0.039	0.799	0.379	0.040	1.558
	Equal variances not assumed			2.162	43	0.036	0.799	0.370	0.054	1.544
Q10	Equal variances assumed	0.001	0.977	-0.485	61	0.629	-0.167	0.343	-0.853	0.520
	Equal variances not assumed			-0.496	42	0.623	-0.167	0.336	-0.845	0.511
Q11	Equal variances assumed	0.443	0.508	0.803	61	0.425	0.214	0.267	-0.319	0.748
	Equal variances not assumed			0.826	43	0.414	0.214	0.260	-0.309	0.738
Q12	Equal variances assumed	0.179	0.674	1.764	60	0.083	0.620	0.352	-0.083	1.324
	Equal variances not assumed			1.806	43	0.078	0.620	0.344	-0.072	1.313
Q13	Equal variances assumed	2.839	0.097	0.217	60	0.829	0.079	0.364	-0.650	0.808
	Equal variances not assumed			0.235	50	0.815	0.079	0.336	-0.597	0.755
Q14	Equal variances assumed	0.172	0.679	0.872	61	0.387	0.286	0.328	-0.370	0.941
	Equal variances not assumed			0.894	43	0.376	0.286	0.320	-0.359	0.930
Q15	Equal variances assumed	0.000	0.994	-0.047	60	0.963	-0.017	0.374	-0.765	0.730
	Equal variances not assumed			-0.046	38	0.964	-0.017	0.382	-0.790	0.756
Q16	Equal variances assumed	3.523	0.065	1.677	60	0.099	0.566	0.337	-0.109	1.240
	Equal variances not assumed			1.767	47	0.084	0.566	0.320	-0.079	1.210
Q17	Equal variances assumed	8.519	0.005	2.362	60	0.021	0.750	0.318	0.115	1.386
	Equal variances not assumed			3.024	57	0.004	0.750	0.248	0.254	1.247
Q18	Equal variances assumed	0.457	0.501	-0.462	60	0.646	-0.131	0.284	-0.699	0.437
	Equal variances not assumed			-0.432	34	0.668	-0.131	0.304	-0.749	0.486
Q19	Equal variances assumed	1.234	0.271	1.370	60	0.176	0.427	0.312	-0.197	1.052
	Equal variances not assumed			1.546	55	0.128	0.427	0.277	-0.127	0.982
Q20	Equal variances assumed	2.297	0.135	-2.089	61	0.041	-0.595	0.285	-1.165	-0.025
	Equal variances not assumed			-1.958	34	0.058	-0.595	0.304	-1.213	0.022

Table 4: Mann-Whitney U Wilcoxon W

Test Statistics[a]																				
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
Mann-Whitney U	221	298	236	292	410	290	241	317	296	399	386	309	402	384	423	318	293	412	348	306
Wilcoxon W	1041	1159	1139	1195	1271	1110	1061	1137	1157	630	1289	1170	633	1287	1284	1179	1154	643	1209	537
Z	-3.144	-2.126	-3.131	-2.225	-0.361	-2.050	-2.798	-1.723	-2.171	-0.681	-0.851	-1.914	-0.438	-0.912	-0.117	-1.750	-2.231	-0.348	-1.356	-2.084
Asymp. Sig. (2-tailed)	0.002	0.034	0.002	0.026	0.718	0.040	0.005	0.085	0.030	0.496	0.395	0.056	0.662	0.362	0.907	0.080	0.026	0.728	0.175	0.037

a. Grouping Variable: Past

Table 5: Cronbach's Alpha for all 20 statements.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.830	0.834	20

Table 6: Acceptable Level of reliability (George & Malley, 2003).

a	> 0.90	Excellent
b	0.80 - 0.89	Good
c	0.70 - 0.79	Acceptable
d	0.60 - 0.69	Questionable
e	0.50 - 0.59	Poor
f	< 0.50	Unacceptable

Table 7: Item-total Cronbach's Alpha Statistics.

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q1	68.58	128.284	.547	.797	.815
Q2	68.02	137.625	.328	.438	.826
Q3	68.63	126.523	.574	.567	.813
Q4	69.00	128.821	.508	.637	.817
Q5	67.74	133.126	.560	.565	.817
Q6	69.39	129.920	.463	.540	.819
Q7	67.84	131.885	.567	.755	.816
Q8	67.91	132.510	.583	.745	.816
Q9	69.49	137.683	.211	.441	.833
Q10	68.86	140.944	.135	.551	.836
Q11	68.40	138.495	.303	.585	.827
Q12	69.04	125.213	.636	.703	.810
Q13	69.46	133.788	.364	.546	.825
Q14	68.82	133.969	.385	.694	.823
Q15	68.44	136.108	.261	.505	.830
Q16	68.74	134.412	.361	.539	.825
Q17	68.44	136.536	.294	.592	.828
Q18	67.70	133.784	.479	.777	.820
Q19	67.96	126.142	.719	.671	.808
Q20	68.88	147.503	-.073	.586	.843

Table 8: Dancey and Reidy's (2004) correlation categorization.

Value of the Correlation Coefficient	Strength of Correlation
1	Perfect
0.7 - 0.9	Strong (yellow)
0.4 - 0.69	Moderate (grey-blue)
0.1 - 0.39	Weak (orange)
<0.1	(No fill)
Negative correlation	(Pink)

Table 9: Inter-item Correlation Matrix.

Inter-Item Correlation Matrix																				
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
Q1	1.000	0.299	0.482	0.648	0.406	0.264	0.397	0.495	0.331	-0.232	0.166	0.606	0.234	0.011	0.214	0.394	0.010	0.098	0.488	-0.352
Q2	0.299	1.000	0.086	0.177	0.140	0.252	0.402	0.423	0.058	-0.037	0.151	0.268	-0.134	0.119	0.280	0.107	0.086	0.282	0.230	-0.010
Q3	0.482	0.086	1.000	0.477	0.506	0.380	0.414	0.418	0.281	0.041	0.286	0.390	0.205	0.071	0.046	0.319	0.242	0.239	0.492	-0.092
Q4	0.648	0.177	0.477	1.000	0.256	0.238	0.579	0.575	0.316	-0.120	0.243	0.433	0.114	-0.056	0.232	0.207	-0.014	0.243	0.430	-0.272
Q5	0.406	0.140	0.506	0.256	1.000	0.300	0.372	0.374	-0.065	0.114	0.084	0.335	0.341	0.234	0.251	0.468	0.325	0.393	0.500	-0.200
Q6	0.264	0.252	0.380	0.238	0.300	1.000	0.251	0.283	0.197	-0.051	0.302	0.464	0.291	0.273	0.105	0.121	-0.032	0.138	0.420	0.118
Q7	0.397	0.402	0.414	0.579	0.372	0.251	1.000	0.749	0.130	0.013	0.105	0.358	0.004	0.045	0.297	0.219	0.214	0.552	0.411	-0.189
Q8	0.495	0.423	0.418	0.575	0.374	0.283	0.749	1.000	0.009	-0.038	0.202	0.390	0.057	-0.018	0.304	0.371	0.099	0.536	0.497	-0.278
Q9	0.331	0.058	0.281	0.316	-0.065	0.197	0.130	0.009	1.000	-0.080	0.232	0.249	0.196	0.063	-0.042	0.038	-0.126	-0.122	0.082	0.136
Q10	-0.232	-0.037	0.041	-0.120	0.114	-0.051	0.013	-0.038	-0.080	1.000	0.137	-0.085	0.321	0.488	-0.109	-0.085	0.477	0.083	0.118	0.469
Q11	0.166	0.151	0.286	0.243	0.084	0.302	0.105	0.202	0.232	0.137	1.000	0.150	0.110	-0.062	-0.005	-0.182	0.189	-0.047	0.423	0.339
Q12	0.606	0.268	0.390	0.433	0.335	0.464	0.358	0.390	0.249	-0.085	0.150	1.000	0.177	0.340	0.310	0.408	0.011	0.425	0.589	-0.073
Q13	0.234	-0.134	0.205	0.114	0.341	0.291	0.004	0.057	0.196	0.321	0.110	0.177	1.000	0.506	-0.002	0.105	0.242	0.057	0.330	0.175
Q14	0.011	0.119	0.071	-0.056	0.234	0.273	0.045	-0.018	0.063	0.488	-0.062	0.340	0.506	1.000	0.052	0.190	0.407	0.311	0.319	0.263
Q15	0.214	0.280	0.046	0.232	0.251	0.105	0.297	0.304	-0.042	-0.109	-0.005	0.310	-0.002	0.052	1.000	0.153	0.100	0.541	0.170	-0.283
Q16	0.394	0.107	0.319	0.207	0.468	0.121	0.219	0.371	0.038	-0.085	-0.182	0.408	0.105	0.190	0.153	1.000	0.128	0.418	0.359	-0.337
Q17	0.010	0.086	0.242	-0.014	0.325	-0.032	0.214	0.099	-0.126	0.477	0.189	0.011	0.242	0.407	0.100	0.128	1.000	0.147	0.323	0.068
Q18	0.098	0.282	0.239	0.243	0.393	0.138	0.552	0.536	-0.122	0.083	-0.047	0.425	0.057	0.311	0.541	0.418	0.147	1.000	0.424	-0.177
Q19	0.488	0.230	0.492	0.430	0.500	0.420	0.411	0.497	0.082	0.118	0.423	0.589	0.330	0.319	0.170	0.359	0.323	0.424	1.000	-0.047
Q20	-0.352	-0.010	-0.092	-0.272	-0.200	0.118	-0.189	-0.278	0.136	0.469	0.339	-0.073	0.175	0.263	-0.283	-0.337	0.068	-0.177	-0.047	1.000

A Principal Components Analysis (PCA) with a Varimax (orthogonal) rotation of the 20 statements was conducted on the data gathered from 62 faculty participants. An examination of the Kaiser-Meyer Olkin measure of sampling adequacy suggests that the sample was factorable (KMO=0.685) greater than 0.600 indicating satisfactory adequacy as shown in Table 10, considering that above 0.500 usually indicate appropriateness of the factor analysis. In Figure 2 the scree plot is describes each factor indicating that after factor 5 there is a sharp change in curvature of the scree plot. This indicated that after factor 5 the total variance accounts for smaller amounts. In the present study only 4 factors will be extracted by combining the relevant variables together. In the total variance explained Table 11, the Eigen values are the variances of the factors where the total column indicates the Eigenvalues. The most variance and highest Eigen values are observed in the first factor. The next factor will account for additional variance left until the last factor. The percentage of variance represents the percent of the total variance accounted by each factor and the cumulative percentage of the variance account is described. As shown, there is little change from component 4 to 5.On the basis of Varimax Rotation 4 factor were extracted. Each factor is constructed from 20 variables as shown in Table 12. The four factors extracted explained 59.95% of the variance as indicated in Table 11. Because the fourth component has only one variable, it was not considered as a factor. According to the grouping, each group was named accordingly as teacher's confidence ability, Impact on lesson's plan, and VIP student's contribution to the class. The five highest scores Q5 (I feel uneasy when I have to talk with a VIP student), Q7(I believe that having a VIP student in my regular class will affect negatively other students), Q8 (The extra attention VIP student require will be to the detriment of other students.), Q18 (I believe the VIP student lacks study skills) and Q19 (I feel that I don't want to teach VIP student because it requires more effort) all belonging to component 1 (Teaching self-confidence in the ability to teach) as demonstrated by factor analysis. Table 13 suggests that faculty with experience teaching the VIP student have higher scores. Independent t-test has however indicated that only Teacher's confidence and Students' contribution factors were significant different. Lesson impact due to the presence of a VIP student in class has a neutral score close to 3 and does not indicate a significant difference between faculty with and without previous experience with VIP student instruction.

Table 10: Inter-item Correlation Matrix.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.685
Bartlett's Test of Sphericity	Approx. Chi-Square	539.936
	df	190
	Sig.	.000

Table 11: Total variance explained.

Total Variance Explained

Component	Initial Eigenvalues			Loadings			Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.745	28.726	28.726	5.745	28.726	28.726	3.991	19.955	19.955
2	2.697	13.483	42.209	2.697	13.483	42.209	3.174	15.869	35.824
3	2.032	10.159	52.368	2.032	10.159	52.368	2.767	13.833	49.657
4	1.517	7.587	59.955	1.517	7.587	59.955	2.060	10.298	59.955
5	1.268	6.341	66.296						
6	0.945	4.724	71.020						
7	0.831	4.153	75.172						
8	0.784	3.920	79.093						
9	0.708	3.542	82.635						
10	0.651	3.256	85.891						
11	0.525	2.626	88.517						
12	0.460	2.300	90.817						
13	0.366	1.832	92.649						
14	0.322	1.612	94.261						
15	0.301	1.505	95.766						
16	0.260	1.302	97.068						
17	0.215	1.075	98.143						
18	0.156	0.780	98.923						
19	0.124	0.619	99.542						
20	0.092	0.458	100.000						

Extraction Method: Principal Component Analysis.

Table 12: Component matrix.

Component Matrix[a]

	Component			
	1	2	3	4
Q19	0.770	0.244		
Q8	0.759	-0.243		0.292
Q12	0.724		0.121	-0.149
Q1	0.716	-0.256	0.310	-0.257
Q7	0.714	-0.174	-0.104	0.366
Q4	0.676	-0.269	0.310	
Q3	0.664		0.251	-0.135
Q5	0.654	0.151	-0.246	-0.256
Q18	0.606		-0.546	0.186
Q16	0.534	-0.132	-0.313	-0.463
Q6	0.508	0.201	0.330	
Q15	0.418	-0.236	-0.372	0.200
Q10		0.773	-0.218	0.183
Q14	0.293	0.692	-0.266	-0.183
Q20	-0.239	0.676	0.293	0.329
Q13	0.309	0.583		-0.410
Q17	0.270	0.539	-0.343	0.107
Q9	0.225		0.646	-0.134
Q11	0.278	0.296	0.532	0.443
Q2	0.423	-0.112		0.516

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Table 13: Group statistics of three components from factor analysis arranged by past teaching experience the VIP.

Group Statistics

Past		N	Mean	Std. Deviation	Std. Error Mean
T_Confidence	Yes	21	4.2352	0.55052	0.12013
	No	42	3.6455	0.90261	0.13928
Lesson_Impact	Yes	21	3.3971	0.54325	0.11855
	No	42	3.1369	0.79106	0.12206
Students_Contribution	Yes	21	3.6667	0.85635	0.18687
	No	42	3.0833	0.98102	0.15137

Conclusion and Recommendations

Despite the fact that this study has an exploratory character, results seem to indicate that faculty with experience teaching the visually impaired have a positive attitude towards teaching the visually impaired and most likely appreciate the presence of the visually impaired in the class. We suggest that at least in our institution where the survey was implemented that training and further faculty development be provided so we can better serve the visually impaired students. We also suggest that further research should be done in other institutions to evaluate faculty attitudes towards the visually impaired. Descriptive statistics as well as variability studies and Cronbach's Alpha were utilized to evaluate individual statements performance and internal consistency of the instrument developed. It seems that in general most teachers' scores indicate neutral to positive attitude towards teaching the visually impaired. Even though some biased responses may have been obtained and some refusal to respond some questions, we are confident, and training and faculty development may be crucial tool to help faculty manage an inclusive classroom where the visually impaired student may excel and contribute the class experience Table 14 .

Table 14: Independent sample t-test of components based on with and without past teaching experience.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
T_Confidence	Equal variances assumed	3.390	0.070	2.743	61	0.008	0.590	0.215	0.160	1.020
	Equal variances not assumed			3.206	58.416	0.002	0.590	0.184	0.222	0.958
Lesson_Impact	Equal variances assumed	1.445	0.234	1.354	61	0.181	0.260	0.192	-0.124	0.645
	Equal variances not assumed			1.529	54.827	0.132	0.260	0.170	-0.081	0.601
Students_Contribution	Equal variances assumed	0.028	0.867	2.317	61	0.024	0.583	0.252	0.080	1.087
	Equal variances not assumed			2.426	45.336	0.019	0.583	0.240	0.099	1.068

The Factor Analysis has identified 3 core factor that had a meaningful interpretation that may affect teachers' attitudes. They can be categorized as under 1- Teacher's confidence to teach the visually impaired, 2- Lesson impact due to the presence of the visually impaired in a regular classroom, and 3- the recognition of the visually impaired contribution to the enrichment of the classroom experience Table 15. These factors seem to indicate that experience with teaching the visually impaired enhance teacher's confidence to teach the visually impaired and recognition of the visually impaired contribution. The first factor, teacher's confidence, explains 28.7% of the variability on the performance of the open-ended question. It is necessary to have confidence in the ability to teach the visually impaired in order to faculty to feel comfortable teaching the visually impaired and training may be the option to build up confidence. The second factor the impact on the lesson plan, which was relatively neutral for both experienced and non-experienced faculty seems to be a factor that may improve with training and awareness of different tools and techniques that are available for the visually impaired and faculty to better communicate and enhance learning to incorporate in the lesson

plan. This factor explains 13.5% of the variability of the performance of the open-ended questions and may be an area that should be focused to improve and emphasize during training and faculty development. The third factor, recognition of the visually impaired to the classroom is a consequence of experiencing the visually impaired student in the classroom. It may also be part of training as well as sharing experience of faculty that had taught the visually impaired in the past. This factor explains 10.1% of the variability on the performance of the open-ended questions. The findings of this study and the importance of training as a transformative tool to change teacher's' attitudes towards the visually impaired is in conformity with that of Korir, 2015 who have found that visually impaired student may excel far better than sighted students. Korir also admits that most teachers do not have the skills to handle the visually impaired in the classroom as the source of negative attitude towards the visually impaired student.

Table 15: Correlation between the three components.

Correlations

		T_Confidence	Lesson_Impact	Students_Contribution
T_Confidence	Pearson Correlation	1	0.226	.289*
	Sig. (2-tailed)		0.073	0.020
	N	64	64	64
Lesson_Impact	Pearson Correlation	0.226	1	.261*
	Sig. (2-tailed)	0.073		0.038
	N	64	64	64
Students_Contribution	Pearson Correlation	.289*	.261*	1
	Sig. (2-tailed)	0.020	0.038	
	N	64	64	64

*. Correlation is significant at the 0.05 level (2-tailed).

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