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Increasing Advocacy for Information Systems Students with Disabilities through Disability Film Festivals at a Major Metropolitan University

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Abstract

College does not bestow enough engagement of computer science and information systems students with higher-functioning people with disabilities. Information systems students without disabilities do not have enough experiences in diversity with equivalently skilled students with disabilities. In this paper, the authors expand the knowledge of information systems students without disabilities through *Disability Film Festivals* depicting not the impairments but the intelligence of those with disabilities. The authors learn that features of the films are facilitating engagement and facilitating advocacy of the information systems students for the diversity of those with disabilities having inherent information systems skills. The findings of this study from 2015 will be beneficial to information systems professors and students in encouraging more receptivity to higher-functioning students with disabilities.

Keywords: disability film media, disabilities, information systems curricula, science, technology, engineering and mathematics (STEM), students with developmental and intellectual disabilities (IDD).

1. BACKGROUND

Colleges contain 2 million people with disabilities (Martin, 2012) from a community in the country of 54 million people with disabilities (Riley II, 2005) or 6 million people with cognitive disabilities – the common disorders of students with disabilities in computing (Tamer, 2017). Common among students with disabilities is diminishment directly or indirectly by bullying and harassment incidents (Carter & Spencer, 2006) by other students without disabilities - 63% of students with autism developmental disorders are impacted negatively by bullying from those without the disorders (Caiola, 2017). Students with disabilities, especially affected female students, lesbian, gay, bi-sexual and transgender (LGBT) students and students labeled with

developmental and intellectual disabilities (IDD) (Obinna, Krueger, Osterbaan, Sadusky & DeVore, 2005), are impacted negatively by incidents of physical and sexual intimidation more than students without disabilities (Harrell, 2014). Even though most students without disabilities do not engage in the intimidations, their feelings for diversity and fairness can be flavored by fear or ignorance (European Commission, 2007) as they focus not infrequently on defects or identifiable impairments of “retard” students with disabilities (Heasley, 2017a), ignoring intimidations (Coloroso, 2002) and inevitably misjudging those with disabilities. The focus on impairments, instead of on the assets or the innate intelligence of intricate personalities, constrains perceptions of the potential of those with disabilities in fields of post-secondary education, such as in computer

science and information systems and in STEM (science, technology engineering and mathematics), and in fields of industry.

The fields of computer science and information systems desire more students with or without disabilities in majors in STEM (Denning, Tedre, & Youngpradit, 2017). Firms, including Microsoft (Heasley, 2017b), are hiring higher-functioning (i.e. less impaired) millennial students with disabilities. Even if considered aloof, higher-functioning students with developmental and intellectual disabilities are eager to learn exciting fields and can be exceptional learners (Warm & Stander, 2011), and students with developmental disorders (e.g., Autism Spectrum Disorders [ASD] or Asperger's syndrome) with less impairments can be ideal for occupations in STEM (Eveleth, 2011 & Swinhoe, 2013), especially as savants (Piore, 2013), but only a limited number of them are indicated in the literature (Kuchment, 2013) to be in information systems programs at post-secondary institutions – only 11% of students with disabilities are in undergraduate programs, only 7% are in graduate programs, and only 1% are in doctorate programs, of STEM (Burrelli, 2012). The misjudged perceptions if real of the students without disabilities as to the diversity and potential of higher-functioning students with disabilities, and the perceptions of the higher-functioning students with disabilities if real and similar, as to their potential in information systems, may be explanations for the low number of those with disabilities in schools of information systems. The underrepresentation of students with disabilities in information systems (Ladner & Burgstahler, 2015) may be addressed minimally by changing the perceptions of the students without disabilities, the goal of the program introduced in this paper.

2. INTRODUCTION

Apart from current outreach programs for higher-functioning middle / high school students with disabilities, the authors of this paper introduced a *Celebration of Individuals with Disabilities in Film: Disability Film Festival* program (Figure 1 in Appendix), for largely students without disabilities in the Seidenberg School of Computer Science and Information Systems of Pace University. The program began in 2013 as a community engagement project for evaluating films from the disability film media, such as the *Reel Abilities Disabilities Film Festival* and the *Sprout Film Festival*, in New York City, and a few films developed by the students with people with disabilities, for annual film presentations at the school. The focus of the program is evaluating

the films for the depiction of the diversity and the intelligence, not of the impairments, of higher-functioning peers with disabilities (Grandin & Panek, 2013 & Yuknis & Berstein, 2017), in inclusive positive scenarios in industry and in society, and including the information systems students without and with disabilities in the audiences at the Festival presentations. The more instances students without disabilities learn of other peers with disabilities with intricate but normal personalities – not the disabilities but the possibilities, the more positivism and recognition they may have of the potential of those with disabilities (Saito & Ishiyama, 2005); and even more that the students with disabilities in the school learn of other higher-functioning peers with disabilities, the more pride and respect they may have of their own strengths. The potential skills of higher-functioning people and peer students with disabilities evident in the festival films may influence the students without disabilities to be more positive for those with disabilities.

Annually the program consists of a chosen 5-7 festival films evaluated from 27-51 films furnished to the school, or 35 festival films from 173 films, since 2013. Each of the films is essentially 9-21 minutes of narrative stories, largely of millennial people with developmental and intellectual disabilities (IDD) (e.g., Autism Spectrum Disorders [ASD]) and other disabilities (e.g., paralytic physical disabilities).

For example, in 2017, *Anna* is depicting a higher-functioning peer student with Autism Spectrum Disorders (ASD) encountering students without disabilities not knowledgeable of ASD; *Children of God* is depicting an intellectually nimble youngster with a paralytic physical disability; *Dancing on Wheels* is depicting a determined highly-functioning woman encountering issues in life with non-genetic physical disabilities; *Four Quarters of Silence* is depicting highly-functioning young football students with hearing impairments engaging in game planning and playing; *Picked* is highlighting an independent young student encountering insensitivity of instructors; *Stutter* is highlighting an intellectually nimble parent and son student with impairments in speech encountering harassment of students without disabilities; and *The Quiet Ones* is highlighting smart students with impairments in speech encountering intimidations by policepersons.

Each of the films is followed by discussions with distinguished panelists in the field of disability empowerment. Films at the Festivals are

inspirational short stories for students with and without disabilities. The program is played in 3 – 6 day periods of presentations to audiences averaging 129-274 people, including students without and with disabilities majoring or not majoring in STEM and those with disabilities in the neighborhood, since 2013.

The goal of the *Disability Film Festival* is in impacting the engagement and advocacy perceptions of the information systems students without disabilities in the Seidenberg School to be less fearful and more knowledgeable and more positive about those with disabilities. Is the Festival facilitating engagement in the positivity of the students without disabilities for those with disabilities?; Is the Festival facilitating advocacy in the positivity of the students without disabilities for those with disabilities? The Festival may or may not be forming a foundation for influencing perceptions of positivity of potential for those higher-functioning types with disabilities, a foundation important for inclusion of more of these students in a post-secondary institution (Kaweski, 2011). Though the goal of the program is impacting the students without disabilities, the higher-functioning information systems students with disabilities, or potential information systems students with disabilities, may be impacted tangibly to be in the field of information systems. The literature on film opportunities in addressing the underrepresentation of students with disabilities in information systems and in STEM is limited in scholarly study.

3. FOCUS OF PAPER

The focus of the paper is to evaluate the *Disability Film Festival* in its goal in impacting or not impacting the perceptions of information systems students without disabilities as to the potential of those with disabilities. The paper is evaluating the 2017, 2016 and 2015 *Disability Film Festival* programs from the 2014 *Disability Film Festival* program (Lawler, Iturralde, Goldstein, & Joseph, 2015)*. The evaluation in this paper is on factors from the 2014 program, but it is focusing on students without disabilities:

Engagement from Features of Disability Film Festivals –

Importance – Extent of impact from which the information systems students without disabilities perceived features of the films in proper representations of the potential of those with disabilities; and

Satisfaction – Extent of impact from which the information systems students without disabilities perceived features of the films in furnishing satisfaction from proper representations of the potential of those with disabilities.

Advocacy from Features of Disability Film Festivals –

Self-Efficacy – Extent of impact from which the information systems students without disabilities perceived the storytelling of the films in furnishing a foundation for them to be advocates for those with disabilities; and

Sociality – Extent of impact from which the information systems students without disabilities perceived the storytelling of the films in influencing a motivation for them to be involved in proactive programs of public service for those with disabilities.

The importance of this paper is that positivity of students without disabilities for higher-functioning students with disabilities, including the positivity of the students with disabilities for themselves, may have profound influence on the motivation of those higher-functioning types with disabilities to attain their potential (Espelage & Swearer, 2003) in the field of information systems and in STEM. The results of this study will be helpful to information systems professors in learning a media method for a more inclusive receptivity to higher-functioning students with disabilities in STEM.

*The 2013 *Disability Film Festival* program was a pilot program by the authors.

4. METHODOLOGY OF PAPER

The methodology of this paper consisted of evaluating 19 films from the 2017 (7 films), 2016 (5 films) and 2015 (7 films) *Celebration of Individuals with Disabilities in Film: Disability Film Festival* program (Figure 1), excluding the foundational 2014 (9 films) and the pilot 2013 (7 films) *Festivals*. The evaluations were done by 81 information systems students without disabilities in 2017 (27 students), 2016 (31 students) and 2015 (23 students), in the Seidenberg School of Computer Science and Information Systems of Pace University and in the New York University Tandon School of Engineering, in 3 month periods preceding the programs. The evaluations of the films were done from a checklist instrument of Likert-like questions, from which focus groups of the students without disabilities anonymously rated the films on the aforementioned factor

perceptions of engagement – importance and satisfaction and advocacy – self-efficacy and sociality, on a scale of (5) – very high impact to (1) – very low impact, with (0) as a further option.

The approach to the methodology of this paper conformed largely to the methodology in the 2014 *Disability Film Festival* program (Lawler, Iturralde, Goldstein, & Joseph, 2015), except for the focus on students without disabilities in this study. The evaluations were moderated by the first author from focus group methodology (Krueger & Casey, 2009) in the 2015, 2016 and 2017 periods of this study. The instrument of this study was reviewed in the context of construct, content and face validity, including sampling validity, as in the 2014 study (Lawler, et.al., 2015).

The data interpretations of the resultant statistics (McClave & Sincich, 2014) was performed by the second author from the MAT LAB 7.10.0 Statistics Toolbox.

5. ANALYSIS AND DISCUSSION OF RESULTS

An analysis of the collected data from the focus groups is disclosing engagement (means = 3.52 / 5.00) and advocacy (3.02) perceptions of the students without disabilities in the 2015 – 2017 periods. Engagement in importance (3.55) and satisfaction (3.49) and advocacy in self-efficacy (3.47) and sociality (2.56) from the *Disability Film Festival* programs are generally highlighting perceptions of positivity of the information systems students without disabilities for the potential of those with disabilities, in the 2015 – 2017 periods of this study. Factors of engagement (importance and satisfaction) and advocacy (self-efficacy and sociality) are generally indicating perceptions of positivity in each of the years – 3.36 and 3.34 and 3.33 and 2.45 in 2015, 3.67 and 3.57 and 3.66 and 2.34 in 2016 and 3.60 and 3.56 and 3.43 and 2.85 in 2017 - of this study.

(The results in summary are in Tables 1a and 1b of the Appendix.)

Data on engagement (importance and satisfaction) and advocacy (self-efficacy and sociality) perceptions are generally notable from the films in the current 2017 program. Films in 2017 of *Anna* (3.56 [high] – 2.85 [low]), *Children of God* (4.00 – 3.11), *Dancing on Wheels* (3.26 – 2.37), *Four Quarters of Silence* (4.67 – 4.22), *Picked* (2.96 – 1.81), *Stutter* (2.93 – 2.04) and *The Quiet Ones* (4.22 – 3.52) are rated generally

high in positivity of potential of the peers with disabilities by the students without disabilities. The films in the 2017 and 2016 programs are mostly averaging higher in perceptions than the films in the 2015 program. (The results in detail of the 2015, 2016 and 2017 study are in Tables 2a, 2b and 2c, along with correlations and frequencies in Tables 3 and 4, of the Appendix.)

The perception results from the information systems students are indicating that they are learning about the potential of those with disabilities to be continuing members in post-secondary institutions and in society. Though the films in the 2015 – 2017 programs are not depicting peer information systems students with disabilities, they are depicting diversity of those with disabilities in humanness similar to information systems students without disabilities. The depictions are not focusing on the impairments (e.g., deafness and Down syndrome) but on the inherent intelligence of those with disabilities to be in fields and majors, such as STEM, like other students without disabilities.

Most of the students without disabilities in the Seidenberg School are not encountering those with disabilities until they are engaging in the evaluations in the film programs and joining in the presentation sessions. In distanced film interactions with those with disabilities, including those with developmental and intellectual disabilities (IDD) and those with physical disabilities, those without disabilities are learning in the representations of the media more of the positive perspectives if not the skills of those with disabilities (Antonio et.al., 2004). The engagement perceptions of positivity are generally indicating that those without disabilities in the school are learning more about the potential of those higher-functioning types with disabilities (e.g., Autism Spectrum Disorders [ASD]), though the advocacy perceptions are not indicating equivalently more motivation to be in public service apart from STEM.

Moreover, notable is the potential of those higher-functioning types with disabilities to be properly in information systems with those students without disabilities.

Overall, the data results of this study are reassuring for the receptivity of those without disabilities for those higher-functioning types with disabilities to be in schools of information systems.

6. IMPLICATIONS OF PROGRAM

The films in the program are clearly deepening the knowledge of the students without disabilities about current and potential information systems students with disabilities. The films are different from mainstream media in depictions of diversity (DC Partners in Transition, 2013), especially in images of higher-functioning people with disabilities from their intelligence, not their impairments (Grandlin & Panek, 2013). The implication of the program is that perceptions of students without disabilities are important in influencing the continuance and inclusion of students with disabilities in majors in information systems and in STEM.

The focus on the intelligence not the impairments of the students with disabilities is enhancing the feasibility of increasing interactions of students with and without disabilities. Discussions and further interactions of the information systems students without disabilities however distanced in films increase their learning of the perspectives of those with disabilities (Astin, 1993). Interactions later in gender, orientation by sex and race intersectionality increase their learning of the perspectives of those who may also have disabilities (Vaccaro & Kimball, 2017), insuring that numerous student types are learning in a less intimidating post-secondary institution. Increasing the interactions of student types may inform those with disabilities that they are members of the school like those without disabilities, with benefits to both types (Zirkel, 2008). The foundation for involvement of those with disabilities in the life of the Seidenberg School is an implication of the program.

The focus on increasing the knowledge of people with disabilities as people with potential is a foundation for helping anti-bullying initiatives in the school and the university. Students without disabilities are learning to be more than docile observers to discrimination based on disability (McNamara, 2013), especially in harassment incidents with students with mental or physical disabilities – *it is our issue, and we will be the solution* is a motto in the school; and they may be learning to be more proactive about disability rights. The implication is the film program in the school is more propitious for those with disabilities if integrated with further programs of the university.

The initiation of the film program is a limited proposition if not integrated with other programs of the school and the university. Internal offices of disability and diversity, health resources and

special needs technologies may be involved in services for students with disabilities, if requested in the semesters by them. They may be learning skills in sociability beyond technology skills from mentoring and networking programs, so that they are included not isolated in hospitable schools of information systems (Albanesi & Nusbaum, 2017), and so that they may be positioned for industrial internship programs if not jobs in STEM. They may be mentored by peer students without disabilities in programs of the school and may be members of networks sponsored by professors or students of the university. The implication of an integrated program is that those with disabilities may be reassured about diversity as a proposition of services to support them.

The final implication of this program is that the results in the Seidenberg School are justifying outreach to higher-functioning students with disabilities to be in post-secondary institutions. The perceptions of the students without disabilities as to the possibilities (Westling, Kelley, Cain & Prohn, 2013) are indicating the potential of those with disabilities, including developmental and intellectual disabilities (IDD), to be involved in a school of computer science and information systems. The inclusion of higher-functioning type students with disabilities insures diversity in a school of information systems and in an industry advocating for diversity of professionals in STEM.

7. LIMITATIONS OF STUDY AND OPPORTUNITIES IN RESEARCH

The paper is focused on a facet of an initiative for inclusiveness of more higher-functioning students with disabilities to be in schools of computer science and information systems. Increased initiatives in outreach to this niche population of potential students are a requisite responsibility for schools of information systems. Increased infrastructural and instructional services to students with disabilities, even if higher-functioning and less impaired, may be however a new responsibility for the schools.

Nevertheless, the results of this study will be helpful in informing professors on an opportunity for initially involving students without disabilities with current or potential students with disabilities who are higher-functioning in performance. The inclusiveness of a qualified but underrepresented population of students in schools of information systems of post-secondary institutions is a clear opportunity for more research and is a response to the underrepresentation.

8. CONCLUSION

The paper addresses the challenge of diversity in advocating for a least likely population to be in a post-secondary institution: people with disabilities.

The paper is contributing an approach for engaging students without disabilities with current and potential students with disabilities in a school of computer science and information systems at a major metropolitan university. The paper is describing a *Disability Film Festival* program that is focusing inspirationally on the intelligence, not the impairments, of those with disabilities, which is improving the perceptions of information systems students without disabilities of those with disabilities. In focus groups, the authors of the paper are learning that depictions of others with disabilities in films from the festival programs are facilitating engagement and advocacy of the students without disabilities in the possibilities of potential of those higher-functioning types with disabilities to be in industrial fields of information systems and STEM.

Most of the students without disabilities did not encounter those with disabilities until they were engaging in the festival programs in the school and had less positive stereotyping of them. The information systems students are however learning more of diversity and fairness in the potential of those higher-functioning and intellectually nimble types to be as productive in STEM as themselves. The program in the multiple semester study is offering an opportunity as to the possibilities of including more of the higher-functioning types to be in schools of information systems.

In short, this study is contributing a discussion for diversity of a qualified underrepresented population of students to join in the life of a university.

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APPENDIX

FIFTH ANNUAL

FILM FESTIVAL MARATHON

CELEBRATION of INDIVIDUALS with DISABILITIES in FILM

Join Pace University and the Seidenberg School of Computer Science and Information Systems for a film festival marathon featuring short films respecting autonomy and empowerment of people with disabilities.

Thursday, March 23
Reception: 5:00 p.m.
Screening: 6:00 p.m.–9:00 p.m.

Pace University
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ReelAbilities FILM FESTIVAL NEW YORK

Seidenberg School of Computer Science and Information Systems
PACE UNIVERSITY
Work toward great access.

This event is sponsored by the Dean for Students and the Seidenberg School of Computer Science and Information Systems.

Figure 1: *Celebration of Individuals with Disabilities in Film - 2017 Disability Film Festival*

Table 1a: Perceptions of Information Systems Students without Disabilities – Summary

	Means 2017 - 2015	Standard Deviations 2017 - 2015
Engagement from Film Program	3.52	1.67
Importance	3.55	1.71
Satisfaction	3.49	1.63
Advocacy from Film Program	3.02	1.96
Self-Efficacy	3.47	1.65
Satisfaction	2.56	2.14

Table 1b: Perceptions of Information Systems Students without Disabilities – Summary

	Means			Standard Deviations		
	2017	2016	2015	2017	2016	2015
Engagement from Film Program						
Importance	3.60	3.67	3.36	1.69	1.57	1.85
Satisfaction	3.56	3.57	3.34	1.61	1.58	1.71
Advocacy from Film Program						
Self-Efficacy	3.43	3.66	3.33	1.63	1.51	1.78
Sociality	2.85	2.34	2.45	2.09	2.17	2.14

Table 2a: Perceptions of Information Systems Students without Disabilities – Detail

	Means	Standard Deviations	Means	Standard Deviations
	2017		2017	
	Importance		Satisfaction	
Engagement from Film Program				
Film 1 – Anna	3.56	1.45	3.33	1.54
Film 2 – Children of God	4.00	1.47	3.93	1.33
Film 3 – Dancing on Wheels	3.22	1.95	3.26	1.87
Film 4 – Four Quarters of Silence	4.67	1.07	4.56	1.09
Film 5 – Picked	2.78	1.50	2.96	1.53
Film 6 – Stutter	2.78	2.06	2.74	1.81
Film 7 – The Quiet Ones	4.22	1.25	4.11	1.25
Advocacy from Film Program				
	Self-Efficacy		Sociality	
Film 1 – Anna	3.37	1.84	2.85	2.05
Film 2 – Children of God	3.67	1.54	3.11	1.95
Film 3 – Dancing on Wheels	3.04	1.87	2.37	2.11
Film 4 – Four Quarters of Silence	4.52	0.89	4.22	1.63

Film 5 – Picked	2.67	1.73	1.81	1.92
Film 6 – Stutter	2.93	1.52	2.04	2.12
Film 7 – The Quiet Ones	3.85	1.20	3.52	1.91

Table 2b: Perceptions of information Systems Students without Disabilities – Detail

	Means Standard Deviations 2016		Means Standard Deviations 2016	
Engagement from Film Program	Importance		Satisfaction	
Film 1	3.44	1.55	3.22	1.55
Film 2	3.57	1.42	3.29	1.47
Film 3	4.10	1.56	4.13	1.57
Film 4	3.94	1.65	3.77	1.61
Film 5	3.39	1.62	3.45	1.63
Advocacy from Film Program	Self-Efficacy		Sociality	
Film 1	3.48	1.40	2.41	2.32
Film 2	3.37	1.72	2.00	2.22
Film 3	3.94	1.48	2.26	2.32
Film 4	4.00	1.29	3.06	1.84
Film 5	3.55	1.59	2.00	2.07

Table 2c: Perceptions of Information Systems Students without Disabilities – Detail

	Means Standard Deviations 2015		Means Standard Deviations 2015	
Engagement from Film Program	Importance		Satisfaction	
Film 1	3.43	1.65	3.43	1.27
Film 2	2.70	2.01	2.35	1.94
Film 3	4.57	0.84	4.43	0.90
Film 4	1.78	1.48	2.17	1.64
Film 5	4.74	0.86	4.48	1.20
Film 6	3.39	2.02	3.43	1.90
Film 7	2.91	1.88	3.04	1.43
Advocacy from Film Program	Self-Efficacy		Sociality	
Film 1	3.61	1.70	2.48	1.93
Film 2	2.65	1.82	1.35	1.80
Film 3	4.35	0.93	2.96	2.16
Film 4	1.83	1.53	0.70	1.46
Film 5	4.70	0.93	4.30	1.52
Film 6	3.26	1.96	3.04	2.08
Film 7	2.91	1.70	2.35	2.08

Table 3: Kendall’s Tau Non-Parametric Correlation of Factor Pairs – 2017 – 2015 – Summary

Factors of Study	Importance Ratings	Satisfaction Ratings	Self-Efficacy Ratings	Sociality Ratings
Satisfaction Ratings	.967*			
Self-Efficacy Ratings	.971*	.955*		
Sociality Ratings	.960*	.964*	.965*	

*Correlation is significant at the 0.01 level – 2-tailed.

Table 4: Frequency Distributions of Factors – 2017 – 2015 – Summary

Factors of Study	Importance	Satisfaction	Self-Efficacy	Sociality
Ratings				
5 – Very High Impact	238 47.1%	211 41.8%	213 42.2%	174 34.5%
4 – High Impact	40 7.9%	55 10.9%	39 7.7%	10 2.0%
3 – Intermediate	126 25.0%	128 25.3%	158 31.3%	118 23.4%
2 – Low Impact	16 3.2%	43 8.5%	15 3.0%	11 2.2%
1 – Very Low Impact	31 6.1%	18 3.6%	28 5.5%	9 1.8%
0 – No Impact	54 10.7%	50 9.9%	52 10.3%	183 36.2%