【附錄10】 A Case Study of Internet Technology and Spiritual Health of College Students

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Abstract: - The focal point of the revolution in information technology was undoubtedly a popular tendency of Internet. The effect of Internet technology on medical health could enhance the human material civilization, longevity and livelihood quality, but its impact on our spiritual health was very strong. It caused human addiction to technology and sometimes mental disorder. The purpose of this paper was to explore the impact of Internet technology on students' spiritual health, and to develop a scale of measuring spiritual health for students from a target university. In order to fulfill this purpose, we adopted the method of literature review, consulting with experts, and sampling survey. We designed a new scale called College Students' Spiritual Health Scale (CSSHS) to examine the current situation of students' spiritual health, and factors, reliability and validity were analyzed. This scale consisted of 67 items, classified into nine factors, such as life stress, stress coping, self-intrinsic exploration, emotion management, spiritual care, spiritual well-being, daily spiritual experience, interpersonal relationship and life meaning. There were 1360 participants, comprised of first-year students from the two-year and four-year collegiate programs and the five-year associate degree programs at Fooyin University in Taiwan. We implemented the CSSHS test in January 2006, and the responses to the spiritual health scale of college students were subjected to statistical analysis through means of SPSS software for Window. Finally conlusions and suggestions derived from the results were discussed and designed a web-based teaching module in the promoting course of spiritual health for undergraduate students.
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Key-Words: Spiritual health, Religious belief, Spiritual well-being, Internet technology, Depression tendency, College Students' Spiritual Health Scale, daily spiritual experience

1 Introduction

It is an inevitable matter that the impact of technological environment on the mind and spiritual health of college students, and it was also a hot issue that people cared about the current situation of students' spiritual health. Based on the Web of Mind Health Information Association in Taiwan, a really healthy person is not only a strong body and mind, but also the stable mood and positive life manner. The value of the spiritual health surpassed the jewels and money. The spiritual health is comprised of the mind health, self-acceptance, living peaceably with other people, adapting positively oneself to circumstances, spiritual well-being, performing one's effective coping behavior in accordance to stress, a low disposition of depression, and receiving the pure religious belief and so on.

The college youths have justly a stage of career exploration, and their life painful index and spiritual pressure increase and result in melancholic tendency. The students overwhelmingly reported that they felt their reliance on the Web in the future for general information would increase rapidly[31]. Furthermore, it resulted in Internet addition via reliance on the Web. There were the phenomena of using problematic Internet[8], using pathological Internet[10] and from stimulus-seeking the performance to the network dependent feeling[24]. Eventually, the impact of Internet technology on college students' spiritual health would often arise. Therefore, it should be the cardinal importance how to develop a scale of measuring students' spiritual health in Internet technological environment. Based on the WHO defined "health" as "being a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The holistic health covered physical, psychological and

spiritual domains for promoting the quality of life. This paper aimed at the psychological and spiritual domains in view of promoting the health level for college students. Health involves a holistic integration of the physical, emotional, spiritual, intellectual, and social dimensions of the people's livelihood.

The health serves justly as a pyramid which could be divide into three parts: physical, mental and spiritual. A complete health is comprised of the satisfactory state of physiological, psychological and spiritual needs. The current students enjoy the high quality of material life with the noble clothes and the delicacy, but their spiritual lives are in vanity. Now technology innovation is the main developmental force in the 21st century knowledge-based economy, and health is the cardinal focus of the technology innovation. Currently emerging technology, such as Internet in medical health technology, accompanied with advanced information and communication technology brought about undoubtedly the human civilization of material expansion, longevity and livelihood quality. The impact of Internet technology is so strong to our spiritual health. It caused human addiction to technology and sometimes mental disorder. It is an important engineering construction of spirituality for solving the problem of students' spiritual health. In the technology of virtual reality, the interaction of human-machine had a direct and indirect effect on a subject's performance. The direct effects of virtual reality simulations on the users involve energy transfer at the tissue level and are potentially hazardous. The indirect effects are neurological, psychological, sociological, or cybersickness and affect the user at a higher functional level [5]. We pointed out the impact that Internet technology caused the user's spiritual health at a higher level and described deliberately the purposes of this study as follows:

1.To understand the current situation of spiritual health for college students under the impact of Internet technology.

2.To develop a scale to assess the spiritual health for college students and adopt a protective strategy of depressive tendency for students of spiritual illness.

2 Documentary Review

We reviewed and explored deliberately the related papers of the realms about spiritual health and Internet technology and their relationship.

2.1 Spiritual health and depression tendency

The assessment of spiritual health could include some indicators, such as connecting to others, meaning derived from living, transcendence, religion attachment and introspection for oneself, etc. The spiritual health may act as a power and resource to a person. By means of transcendence, the spiritual health may help a person to enjoy their meaningful life. Research showed that there was a negative significant correlation between spiritual health and the depressive tendency. Participants who had lower scores of health status were more likely to have lower scores in spiritual health [19]. We should further explore the relationship between spiritual health and the depression tendency. Depression is an abnormal and persistent state of very low mood, sufficient to interfere with enjoyment of life. Typical accompanying signs are slowness of speech and movement, loss of interest and appetites, disturbed sleep patterns and feelings of guilt, low self-esteem, and pessimism. Depression also has a large impact on the spiritual health of a person.

The spiritual health had a negative correlation with perceived stress and depression. There was a positive correlation between perceived stress and depression and also an interaction between spiritual health and perceived stress for depression. It indicated that the better spiritual health could reduce depression more effectively on a given level of perceived stress. The higher the perceived stress was, the better the depression could be buffered by the spiritual health [20]. Gowing [17] describes a spiritually healthy person as: one who possesses the universal and unchanging values in their highest and purest forms, such as truth, right action, peace, love, and non-violence. Like Daniel, he had an excellent spirit, and knowledge, and understanding (Daniel 5:12; 6:3). Extensive empirical support exists for a contribution of spiritual well-being to physical, psychological, and social well-being by using the Spiritual Well-being Scale [15] to understand the spiritual health.

2.2 Spiritual health and Internet technology

In the environment of Internet technology, research showed that computer anxiety and 'threshold effect' were found to correlate with the students' perception of computer skills and ambiguity [3]. In exploring the two-way interaction between external technology information environment and bodily and mental reactions, there appears to be an increased awareness of human aspects when risks and benefits of the rapid spread of information technologies were discussed [1]. With the rapid technological transformation occurring in both work and social life, Internet technology should sufficiently be taken into account

in the planning and implementing study project. It is important to manage and cope with fatigue so that the people do not damage their spiritual health. The management of mental fatigue is important from the viewpoint of occupational risk, productivity, and occupational health management in the environment of Internet technology [32]. It is predicted that psychosomatic syndromes in the workplace will most likely increase in the foreseeable future due to the very rapid changes currently transcending working life [2]. To protect the spiritual health in Internet technology was a focal matter. Another study showed that using the multimedia resource was to augment the students' learning in their practice placement and enabled them to re-examine the issue of psychosis from a multiple perspective[12]. It indicated a way to decrease psychosis and increase spiritual health. In addition, studies showed high prevalence in interpersonal sensitivity, depression, anxiety and hostility; there were significant differences in adolescents' mental health problems especially in terms of gender and age[21]. The measures of patterns of the Internet use were correlated with that of psychosocial maturity and self-efficacy. The results showed that the Internet dependency seemed to be independent of the psychosocial maturity and the general perceived self-efficacy [37].Thus, it was very important to influence the development of better mental health programs for adolescents in Internet technology.

2.3 Spiritual health and religious belief
The related research of spiritual health and religious belief, such as adopting an adaptation- continuum model of personality and coping that used Ferguson's[16] model integrating personality and coping factors to combine theories surrounding religious personality and religious mental health [26]. The research results suggest that when applying Eysenck's model of personality to spirituality, it is extraversion that accounts for most variance in spirituality scores; a new avenue of the empirical investigation in which wider concepts of spirituality and religion can be examined within Eysenck's model of personality[27]. Another study sought to better understand the relationship between religion/ spirituality and physical health and mental health. Hierarchical multiple regression analyses revealed significant associations between components of religion/spirituality and physical and mental health. Private religious practice was inversely related to physical health outcomes, indicating that those who were experiencing worse physical health were more likely to engage in private religious activities, perhaps as a way to cope with their poor health.

Forgiveness, daily spiritual experiences, religious support, and self-rankings of religious/ spiritual intensity significantly predicted mental health status [14]. The relationship between spirituality and health emphasized that religion may have both costs and benefits for the health of those with chronic pain, and could explore further the relationship between spiritual health and religious belief for this study.

2.4 Spiritual health and stress coping
The related study showed that negative life events, perceived stress, a greater use of the negative coping methods of anger and helplessness, and a less use of the positive coping methods of parental support and cognitive coping were significantly related to smoking status[36]. And higher levels of media literacy were associated with more negative attitudes toward smoking and less smoking behavior[34], and explored further the relationship between spiritual health and stress coping for our study. According to another study investigating further the relationship between religiosity, stress and psychological distress for undergraduate sample, the results provide evidence that religiosity is not associated with psychological distress.[33]. In another related research in Taiwan, nursing students entering clinical practice for the first time in a five-year associate degree program are young and have questionable coping skills, all of which can affect their own health. Results showed that stress of students came mainly from the lack of professional knowledge and skills as well as caring of patients; the most common response to stress was social behavioral symptoms; staying optimistic had a positive main effect and improved physio-psycho- social status; problem- solving behavior also had a positive main effect [35]. That study had an important implications for nursing educators in helping their students to overcome stress in clinical practice, and explore further the relationship between spiritual health and stress coping.

2.5 The development of spiritual health scale
We adopt some indicators, such as spirituality, religiosity, lifestyle choices, and so forth, to assess the spiritual health in order to develop a scale. The spiritual health could be assessed through completing a questionnaire or scale with spirituality, religiosity, depressive symptoms and health-risk behavior. Most of adolescents reported some connections with religious and spiritual concepts, and those with higher levels of spiritual well-being, in particular, existential well-being, had fewer depressive symptoms and fewer risk-taking behaviors [7]. This

supports the inclusion of these concepts to promote a healthy adolescent development, and in expanding our investigations beyond religious identification or attendance at religious services to broader concepts of spirituality. The spiritual health instrument, such as Spirituality Scale being a holistic instrument that attempts to measure the beliefs, intuitions, lifestyle choices, practices, and rituals representative of the human spiritual dimension. Findings indicated that three factors of spirituality assist in facilitating the inclusion of spirituality in health care and have the potential to provide a transforming vision [11].

Another study examined the malleability of spirituality among students, and results revealed a statistically significant difference between the three groups, with the treatment group demonstrating the highest levels of spiritual health. If spirituality is at the core of one's health, the implications for promoting health are significant [29]. Another scale development, such as Quality of Life, demographic variables showed only age was significantly associated with quality of life scores [4]. In addition, the survey questionnaire contained 'The Spirituality and Spiritual Care Rating Scale' a newly constructed instrument to aid the investigation and measurement of Spirituality and Spiritual Care. It suggested four factor-based subscales: spirituality, spiritual care, religiosity, and personalised care. Confirmatory Factor Analysis is recommended in order to cross-validate and refine this new Rating Scale[30]. Another study constructed a measure of spiritual meaning, defined as the extent within which an individual believes that life or some force of which life is a function has a purpose, will, or way in which individuals participate, to supplement measures of the personal meaning and implicit meaning. Constitute the Spiritual Meaning Scale (SMS) by using Likert-format items to exhibit desirable psychometric characteristics. Along with measures of personal meaning, implicit meaning, and the Big Five personality dimensions, the SMS was analyzed in terms of its relationship to mental health measures (hope, depression, anxiety, and antisocial features). Regression analyses indicated that each of the meaning variables explained variance in hope and depression beyond the variance explained by the Big Five personality factors [28]. The scales development of the aforementioned spiritual health could further develop an applicable scale for our study.

3 Methods

We adopt the documentary review, interview with experts in the realm of spiritual health and technology education, and survey method to achieve the purposes mentioned above.

3.1 Participants

We interview with 8 experts in spiritual health, and draw up 9 indicators to develop a scale of spiritual health. The validity coefficient is a desirable level through the interactional relation which experts revise or eliminate items from the original scale.

There were 1360 participants, comprised of first-year students from the two-year and four-year collegiate programs and the five-year associate degree programs at Fooyin University in Taiwan.

3.2 Materials

We developed the College Students' Spiritual Health Scale (CSSHS) and factors, reliability and validity were analyzed. CSSHS consisted of 67 items, classified into nine factors, including life stress, stress coping, self-intrinsic exploration, spiritual care, spiritual well-being, emotion management, daily spiritual experience, interpersonal relationship and life meaning. We derived CSSHS from several rating scales of the domestic and foreign scales, such as Spiritual Health Scale[19]; Personal Stress Scale, Beck Depression Scale [20]; Spirituality and Spiritual Care Rating Scale[30]；Spiritual Meaning Scale[28]; Ryff's Scales of Psychological Well-being [13]；Daily Spiritual Experience Scale[11]；and Quality of Life [4], etc. We designed CSSHS to examine the current situation of spiritual health of college students in nine factors. The items of original scale were revised three times, and there were 67 items of final scale. Factor Analysis was performed in an attempt to establish constructive validity and to identify any underlying associations between items in the scale. CSSHS covered nine subscales: life stress (items 1-7), stress coping (items 8-12), self-intrinsic exploration (items 13-25), spiritual care (items 26- 34), daily spiritual experience (items 35-41), emotion management (items 42- 49), spiritual well-being(items 50- 55), interpersonal relationship (items 56- 62)and life meaning (items63-67).

3.3 Procedure

The sampling survey of CSSHS was implemented in January 2006. Participants rated each item on a 5-point, Likert scale ranging from 'totally disagree'(1 point) to 'totally agree'(5 point), and responses to the spiritual health scale were subjected to statistical analysis by using SPSS for Window.

4 Results

According to 1360 subjects responding to items in CSSHS, reliability, validity, and factor analysis were examined by using Pearson correlations, ANOVA, and regression analyses.

The results showed that 67-item CSSHS had a very high level of internal consistency reliability, and its Cronbach's α coefficient was 0.932. And Cronbach's α coefficient were 0.727, 0.744, 0.800, 0.875, 0.856, 0.888, 0.843, 0.881, and 0.851, and it showed that the internal consistency reliability of all nine subscales achieved a very high level. Subscales carry on the validity test of construction by a main axle fact or analysis, and the result could explain that the total variation weighs.

Table 1 Cross-correlations of factors

	A	B	C	D	E	F	G	H	I	J
A Pearson	1	.037	.324	-.035	-.033	.063	-.009	.042	.098	.292
sigificance		.178	.000	.192	.227	.020	.739	.123	.000	.000
B Pearson	.037	1	.119	.322	.181	.425	.377	.310	.408	.501
sigificance	.178		.000	.000	.000	.000	.000	.000	.000	.000
C Pearson	.324	.119	1	.263	.089	.329	.292	.352	.321	.614
sigificance	.000	.000		.000	.001	.000	.000	.000	.000	.000
D Pearson	-.035	.322	.263	1	.504	.473	.583	.443	.457	.716
sigificance	.192	.000	.000		.000	.000	.000	.000	.000	.000
E Pearson	-.033	.181	.089	.504	1	.294	.521	.270	.305	.539
sigificance	.227	.000	.001	.000		.000	.000	.000	.000	.000
F Pearson	.063	.425	.329	.473	.294	1	.672	.601	.601	.762
sigificance	.020	.000	.000	.000	.000		.000	.000	.000	.000
G Pearson	-.009	.377	.292	.583	.521	.672	1	.563	.616	.779
sigificance	.739	.000	.000	.000	.000	.000		.000	.000	.000
H Pearson	.042	.310	.352	.443	.270	.601	.563	1	.647	.730
sigificance	.123	.000	.000	.000	.000	.000	.000		.000	.000
I Pearson	.098	.408	.321	.457	.305	.616	.601	.647	1	.743
sigificance	.000	.000	.000	.000	.000	.000	.000	.000		.000
J Pearson	.292	.501	.614	.716	.539	.762	.779	.730	.743	1
sigificance	.000	.000	.000	.000	.000	.000	.000	.000	.000	

Note-- A: life stress; B: stress coping; C: self-intrinsic exploration; D: spiritual care; E: daily spiritual experience; F: emotion management; G: spiritual well-being; H: interpersonal relationship; I: life meaning; J: spiritual health(total).

The results showed that the relationship among spiritual health and 9 factors were all very significant correlation(.000)(see Table 1). Nine factors were predictable variables to spiritual health by stepwise regression analysis, and revealed that all attained a very significant level(p<.000) by ANOVA.

Table 2 Mean and SD of Gender and Program

Gender, program mean SD	Spiritual health (Total scores)
Male(N=360) mean SD	221.72 25.534
Female(N=1000) mean SD	229.65 24.658
4- year program(N=583)	226.46 23.856
2- year program(N=452)	231.07 25.868
5- year program(N=325)	224.62 25.822
Total (N=1360) mean SD	227.55 25.128

Table 3 ANOVA analysis on Gender

Variance		SS	df	MS	F	sig.
Spiritual	B-group	16644.137	1	16644.137	26.861	.000
health	W-group	841464.461	1358	619.635		
	Total	858108.600	1359			

Table 4 ANOVA analysis on Program

Variance		SS	df	MS	F	sig.
Spiritual	B-group	9080.865	2	4540.433	7.257	.001
health	W-group	849027.735	1357	625.665		
	Total	858108.600	1359			

The results showed that females were more superior than males on spiritual health(see Table2, Table3), and two-year collegiate program was more superior than four-year collegiate program and the five-year associate degree program(see Table2, Table4). We would explore further the causes of these variances, and connect spiritual health with Internet technology.

Table 5 ANOVA analysis on Department

Variance		SS	df	MS	F	sig.
Spiritual	B-group	44460.019	12	3705.002	6.134	.000
health	W-group	813648.581	1347	604.045		
	Total	858108.600	1359			

From Table 5 we could discover a significant difference in 12 departments. Then the departments of physical therapy, nursing, and health were more superior to other departments via a comparison of posteriori.

5 Conclusions

We derived CSSHS from several rating scales of the domestic and foreign scales, consulting with experts in the realm of spiritual health and technology education in order to develop smoothly a scale. CSSHS consisted of 67 items, classified into nine factors, including life stress, stress coping, self-intrinsic exploration, spiritual care, spiritual well-being, emotion management, daily spiritual experience, interpersonal relationship and life meaning, and these factors were predicable variables related to spiritual health.

Through the data analysis of 1360 participants by SPSS software for Window, the result showed that the relationship among spiritual health and 9 factors were all very significant correlation. It indicated that we regarding 9 factors as predictive indicators of spiritual health were available. The 67-item CSSHS

used in this study demonstrated a very high level of internal consistency reliability, and its Cronbach's α coefficient was 0.932. And the result showed that the construct validity was accepted in a reasonable level. Then it was a popular issue in e-learning and web-based instruction how Internet technology made an impact on the spiritual health of college. Students. And this deserved our further study.

6 Suggestions and Implications

The suggestions of this article are to revise CSSHS with the higher reliability and validity to examine the students' spiritual health in Internet technology; educators are challenged to prepare graduates in meeting the needs of individuals with a mental illness within an increasingly Internet technology-based environment; to apply the revised CSSHS to assess effectively the network behavior to evaluate the students' preferences, advantages and disadvantages, and learning, as well as qualitative evaluation of students' critical thinking, supports the value of online teaching in general health education; and to connect research with teaching in technical education with quantitative and qualitative method. Another potential use for the CSSHS may be in the area of spiritual healthy assessment for use both in practice and education. However, in order to achieve this aim we will further examine statistical development of the CSSHS, and may score the related items and factors in an attempt to provide the researcher or educator with an insight into the spirituality and Internet technology according to respondents' view. Further research with similar populations and samples large enough to permit structural equation modeling (SEM) is recommended in order to validate and refine this newly developed instrument, and SEM of Web spiritual health as Figure 1 . Nevertheless, we shall also build an awareness of conceptual differences among instruments, skills, information retrieval languages, and technological literacy of mental health in different information received in a retrieval process, and human-computer interaction reflected in the design of user interfaces for college students or practitioners[22]. For example, we respected the spiritual health in the Internet environment, and nursing practice should be focused on individual patient care and nursing students' mental health in Internet technology for medicine[6].
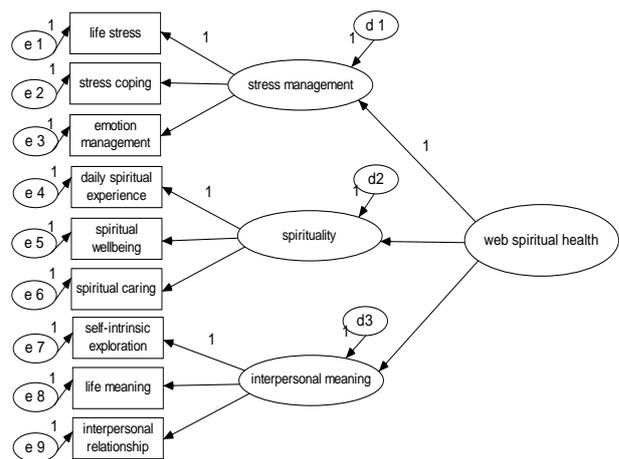

Figure 1 SEM of Web Spiritual Health

From Figure 1 we will find that the Web spiritual health may be measured by three latent variables: stress management, spirituality and interpersonal meaning; and each latent variable has three observable variables respectively: stress management covering life stress, stress coping, and emotion management, spirituality covering daily spiritual experience, spiritual wellbeing and spiritual caring, interpersonal meaning including interpersonal relationship, life meaning and self-intrinsic exploration.

The implications of this article are that we could enhance the effectiveness of students' spiritual health in Internet technology for other colleges via the results of this case study of an university; to contribute to overcoming the spiritual illness by promoting project of spiritual health after the development of scale; to prevent an outbreak of a mental disorder through the careful health in the Internet technological environment. And in case of teaching, teachers could cope with types of stressors, such as a serious student problem, a serious problem with an administrator or teacher; and typical problems with preparing for class, etc. Then assessing the coping strategies of teachers is consistent with the coping theory [18]. Therefore this requires the actual development and evaluation of educational strategies that immerse students in web-based learning [25].

The use of Internet and information technology for teaching nurses and other health professionals has been shown to improve learning outcomes, learners' satisfaction and the learner-learner and learner- teacher interactions [23]. Finally we would present an overview of the embedded teaching design that include classroom teaching and asynchronous threaded discussion in a teaching module by way of promoting course about spiritual

health for under-graduate students. In this article we adopt a case study method, and we will extend this finding to another related spiritual health and Internet issues for the further study.

The CSSHS is mainly a scale of assessing spiritual health of college students, and it would connect spiritual health with Internet Technology to compile a new scale for measuring really the students' spiritual in Internet technological environment. This new scale may be named Internet Spiritual Health Scale for College Students, and it will enable students to know themselves accurately in facing the impact of Internet technology.

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