Journal of Engineering and Applied Sciences 15 (5): 1098-1105, 2020
ISSN: 1816-949X

Excavating Optimal Potential from Each Academic Through Crowdsourcing Conversation

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Abstract: This study displays the extent of possibilities of knowledge sharing in research activities of academics from diverse fields and the conducive conditions for optimizing the benefits. The focus group experiment was conducted in disciplinarity (crossdisciplinarity, interdisciplinarity, multidisciplinarity and transdisciplinarity) information sharing crowdsourcing meeting to determine ways of improving research outputs. The group consisted of academics from computer science and statistics & operations research departments at the Sefako Makgatho Health Sciences University (SMU) in South Africa. Initial data collection consisted of observing the activities of that group and then capturing the salient points. The second data collection was a follow up question guide asking for reflection of the crowdsourcing from the members who participated in the meeting. The findings expressed that synergies were formed from the diverse expertise and experiences. The communication resulted in the enlightenment of members on new learning. Removal of communication barriers enabled sharing of information as well as effective listening during discussions. Most delegates found out that they shared the feature of unfinished researches that were parked which could produce manuscripts for publications. Members also cited the weakness of quick planning which denied delegates enough preparation time and led to the exclusion of some important colleagues from the initial meeting. The recommendations were to have more regular research knowledge sharing discussions on research matters and to revisit backlogged research work as a start for the way forward in enforcing publication strategies.

Key words: Communication, crowdsourcing, disciplinarity, knowledge sharing, research output, synergy

INTRODUCTION

No single person knows everything and everyone knows something. This is factual even in the case of academics who were hired because of extensive knowledge they have. The fields of study in academia are often called disciplines because they are conducted systematically in a well-organized approach. The audacity of effective learning starts with the attitude and openness of individuals towards sharing and receiving information and knowledge from others. Therefore in academia, resistance to learn or to contribute to learning is a pronounced barrier to learning. Failure to produce more knowledge deprives learning. Serenko and Bontis (2013) insinuate that knowledge sharing is an effective way to inspire prompt mass learning. In SMU, research is lacking due to understaffing which leads to work overload and inexperience or knowledge deficiency in research. Teaching methods and attitudes are also not adequate as the standard set by SMU on pass rates are habitually missed. The aim of this study is to show that face-to-face communication can enhance exposition of hidden research and teaching aptitudes from individual academics from diverse disciplines. It also discusses beneficial conditions for the dialogues that enable individuals engaging in dialogues to learn quickly and be prompt beneficiaries in the trade of knowledge. Issues also interrogated the possibilities of rotational headship for academic departments.

Discipline in academia: In academic scenery, a field of knowledge is often termed an academic discipline or just a discipline and refers to a branch of knowledge (Revel, 2003). Discipline integrates expertise, people, projects, communities, challenges, studies, inquiry and research areas intensely associate with a given educational subject area or institutional department. According to Ziman (2000), individuals who facilitate learning of academic disciplines are commonly referred to as experts or specialists. The four intellectual approaches of

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disciplinarity are interdisciplinarity, multidisciplinarity, transdisciplinarity and crossdisciplinarity. These methods incorporate aspects from multiple academic disciplines. Therefore, they address any difficulties emerging from constricted deliberation within specialized fields of study. For example, professionals may encounter trouble communicating across academic disciplines because of differences in language or specified concepts.

Interdisciplinarity: Interdisciplinary could imply involving two or more academic disciplines or fields of study or involve two or more professions, technologies, departments or the like as in academia or business. According to Jacobs and Frickel (2009), interdisciplinarity involves blending several academic disciplines into one activity in order to create a new invention by thinking or acting across boundaries. The term, interdisciplinary, correlates with an interdiscipline or an interdisciplinary field (Hall and Sanders, 2015) which is an organizational unit that crosses traditional boundaries between schools of thought during the emergence of new needs and professions. Applications of interdisciplinary occur within education and training instructions to describe lessons that use methods and insights of several established disciplines or traditional fields of study. Callard and Fitzgerald (2015) enlighten that interdisciplinarity involves academics, researchers, students and tutors in efforts of linking and assimilating numerous academic perspectives, professions or technologies to reach a specific target together. Interdisciplinary may also feature where the discipline has been neglected or even misrepresented in the traditional disciplinary structure of research institutions (Barry *et al*., 2008). Interdisciplinarity can likewise be applied to complex subjects that can only be understood by combining the perspectives of two or more fields.

Multidisciplinarity: Green and Swanborough (2001) describes a multidisciplinary approach as an effort that involves drawing appropriately from multiple academic disciplines to review problems outside normal boundaries and reach solutions based on a new understanding of complex circumstances. According to Plsek and Greenhalgh (2001), multidisciplinarity refers to involving several academic disciplines specializations in an approach to a topic or problem. Multidisciplinarity may be viewed as a group consisting of members with diverse but complimentary experiences, qualifications and skills that contribute to the achievement of the organization's specific objectives.

Transdisciplinarity: According to Wickson *et al*. (2006), transdisciplinarity signifies a research tactic that crosses many disciplinary restrictions to create a complete approach. It applies to research efforts focused on problems that cross the limitations of two or more disciplines and can refer to concepts or methods that were originally developed by one discipline but are currently used by several others. Steinmetz (2007) explained that a transdisciplinary approach enables contributions and scoping across scientific and non-scientific stakeholder communities and facilitates a systemic way to address a challenge. Stokols (2006) explains that transdisciplinarity includes initiatives that support the capacity building required for the successful transdisciplinary formulation and implementation of research actions.

Crossdisciplinarity: Crossdisciplinarity, according to Hyland (2004), means that knowledge explains aspects of one discipline in terms of another. Computer science, mathematics, operations research and statistics are clear examples of disciplines which explain or inform other subjects (Ceruzzi, 2000; Chance and Rossman, 2005; Hillier and Lieberman, 2015; Tobies and Helmut, 2012). Computer science these days is incorporated in every field that has ambitions to advance in the form of modern technologies. Mathematics is used to explain other sciences and even business and physical entities. Statistics expose facts and predict futures in any field which can truthfully show its data. Progressive organisations are users of statistics and computer science, and they tend to consider data as a leading valuable asset. They then involve operations researchers to help them turn data into information that can lead to increasing revenue, intensifying efficiencies and delivering world-class services.

MATERIALS AND METHODS

Exchange of ideas: Exchanging ideas is a platform for information and knowledge sharing. A known mode that is both efficient and reliable for this sharing is through communication. This section deliberates on some essential aspects of communication and is geared towards the sharing of ideas.

Communication: Communication is the act of conveying intended meanings between parties by using mutually understood signs and semiotic rules (Ferguson *et al*., 2014). According to several researchers (Barnlund, 2008; Burgoon *et al*., 2010; Lunenburg, 2011; among others), steps innate to communication are motivation for communicating, message composition, message encoding, medium, noise sources, reception of signals, decoding, interpretation and feedback.

Communication process: Every communication exchange initiates from the sender and ends with the receiver. The sender encodes the idea by selecting words, symbols or gestures with which to compose a message.

The message is the outcome of the encoding which takes the form of verbal, nonverbal or written communication. The message is sent through a medium or channel. The receiver decodes the received message into meaningful information. Noise is anything that distorts the message. Different perceptions of the message, language barriers, interruptions, emotions and attitudes are examples of noise. Lastly, feedback occurs when the receiver replies to the sender's message. Feedback allows the sender to determine whether the message has been received and understood. However, when feedback does not occur after message receipt by the receiver, the communication process is referred to as one-way communication. Two-way communication occurs with feedback and is more desirable. The quality of communication depends entirely on the elements in the communication process and Keyton (2011) highlights that a problem in any element can decrease communication effectiveness. The key to being successful is the ability to work with other colleagues and other stakeholders (faculty, support staff, community members, parents, central office) to develop a shared sense of what should be accomplished.

Barriers to communication: Every leader should develop effective communication (Pauley and Pauley, 2009). Communication can break down if noise exists in any communication element. Eisenberg *et al.* (2010) identifies four types of barriers, namely, process barriers, physical barriers, semantic barriers and psychosocial barriers. These are described below.

Process barriers: All communication process steps are indispensable for effective and good communication and therefore, blocked steps impede communication (Lutgen-Sandvik and Sypher, 2010). Barriers can occur as sender barriers, encoding barriers, medium barriers, decoding barriers, receiver barriers and feedback barriers. These aspects indicate that communication is a complex process. It is also an idea or information exchange process in which interruptions anywhere in the cycle can disrupt effective interpretation.

Physical barriers: Physical interruptions can interfere with the communication effectiveness (Tourish, 2010). The possibilities include a telephone call interlude, drop-in visitors, long distances between people, walls between communicating parties and static from the radio. People often take physical barriers for granted but sometimes they can be removed. For example, an inconveniently positioned wall can be eliminated. Interruptions such as telephone calls and drop-in visitors can be removed by issuing instructions to a secretary.

Semantic barriers: The words chosen for communicating, how they are being used and the meanings attached to them could cause communication barriers (Weiss, 2011). The problem is semantic which is the meaning of the words used. The same word might mean different things to different people. Words and phrases such as efficiency, increased productivity, management prerogatives and just cause may differ in understanding by people working together. Technology can also provide semantic barriers to communication due to jargon and specialised terminology used by technical experts. If people fail to recognize the words/terms, they will not understand the message.

Psychosocial barriers: Three vital concepts related to psychological and social barriers are fields of experience, filtering and psychological distance (Antos, 2011). Fields of experience envelop pasts, insights, beliefs, preconceptions, desires and expectations. When senders encode and receivers decode messages only in their fields of experience context and the sender's field of experience may differ with the receiver's, communication may be difficult. Filtering means that people perceive what they are emotionally attached to. It is caused by personal needs and interests. Psychosocial barriers involve a psychological distance between parties. Successful communication is the essence of a productive organization. However, as discussed previously, communications do break down. Several communication theorists (Abrell, 2004; Auer, 2011; Larson, 2011; Shettleworth, 2010; Weiss, 2011) have focused on the major areas where failures in communication most frequently occur. The major areas where communication break down most frequently occur are regarding deficient sincerity, lack of empathy, detrimental self-perception, unclear role-perception, efforts to distort the message, sender's image of the receiver, mode of communication (in-)ability to communicate, listening (in-)ability, culture, tradition, conditioning, noise and feedback.

Improving communication effectiveness: Effective communication is a collaborative process requiring efforts and skills of both the sender and the receiver. Several communication theorists (Cheney, 2011; Keyton, 2011; Tourish, 2010) have assembled decrees of good communication which is especially, applicable to the sender as follows.

Sender's responsibility: Cheney (2011), Keyton (2011) and Tourish (2010) among others, stress that basic understanding of the communication process is vital for effective idea sharing and also point to the need to clarify ideas before communicating. They suggest examining the true purpose of each communication, considering the total physical and human setting and consulting with others when appropriate in planning communications. They further counsel being mindful of the overtones and the

underlying content of the message while communicating. They endorse taking the opportunity when it arises and advice conveying something of value to the receiver, communicating for the future and to follow up on communication.

Receiver's responsibilities: Receiving messages is vital for communication. Hence, effective listening prominently enhances the communication process. Effective listening skills can be developed. Rules for good listening (Kneen, 2011) are attentiveness (stop talking), comforting the talker, showing interest in the talk, removing distractions, emphasizing with the talker, controlling temper, critiquing with care and asking questions.

Crowdsourcing and its necessities: Crowdsourcing is a sensible process to get a large group of people to work together by locating needed services, ideas or content by lobbying contributions with each participant willing to participate (Estelles-Arolas and Gonzalez-Ladron-De Guevara, 2012). Participants combine their efforts to exceed expectations. Remarkable crowdsourcing paybacks include cost saving, diversity, efficiency, flexibility, fun increased quality, innovation, knowledge, money, networking, optimization of tasks, synergy and teamwork (Brabham, 2013; Cattani *et al*., 2013; Goffee and Jones, 2013; Ishak and Ballard, 2012; Maccoby and Scudder, 2011; Brenner *et al*., 2011; Prpic *et al*., 2015; Savulescu and Persson, 2012).

Challenges of crowdsourcing include some participants lowering work quality, the displeasure of members and time wasting (Brabham, 2012). Thus, resilient methods are needed to monitor, evaluate and correct deviation against crowdsourcing ideals. Unethical crowdsourcing can occur when some members benefit without due acknowledging extended to every worthy participant (Busarovs, 2013). Other positive crowdsourcing elements, according to Andro and Saleh (2017), are access to new ideas and solutions, deeper consumer engagement and opportunities for co-creation, among others.

Conditions for worthy mutual learning: Leaders should not dictate, except when the meeting gets out of control. According to Kofman (2010), contributions of most delegates enhance to optimal participation and optimised sharing. If delegates respect one another, this also encourages increased willingness to contribute. Delegates should also give each other a chance to speak. They should listen to one another and they should speak only when it is their turn. This avoids messy dialogues and time wasting. It also ensures focus in the discussions.

Synergistic podium: Synergy is a known model entailing the creation of a whole that is greater than the mere sum of its parts. According to several researchers (Gillwald *et al*., 2012; Goffe and Jones, 2013; Lawford, 2003), it spirals competitiveness, improves strategy and promotes network identity to breed an eccentric tool to compete in the market. According to Mcshane *et al*. (2010), dialogues and partnerships can become strategic in relating organizational networks for creating synergies. Organizations with unrelated fundamental proficiencies can connect their existing business networks to address a multifaceted business concern. Thus, the dexterity of varied expertise and marketing networks that understand the local network, combined with benchmarked practices can provide superior worth for any single business entity of the created network. Consequently, the synergy produced by the networks could increase overall capacity and efficiency of the marketing efforts.

Experimental design: SMU is immensely supportive of the schools in the health sciences. Even the name of the university advocates 'Health Sciences' which does not promote the comprehensiveness of the university. The School of Science and Technology (SST) in general, scraps for support on any matter it wants to pursue its work and growth. As a result of under-resourcing, efforts for research progress depends on individual initiative and innovation. This study reports one such initiative.

Experimentation: A gathering was organised for a focus group meeting to discuss research that was lacking in the academic Departments of the School of Science and Technology in SMU. The group consisted of 12 delegates consisting of 11 academics of diverse experiences ranging from 31 years to 3 years and an intern with 5 months experience. Disciplines of the delegates were computer science, mathematics, operations research and statistics. Their skills and prior training included industry consulting, teaching and use of technology. About 10 of the delegates had previous academic writing which had produced journal articles in accredited or high indexed journals. All the delegates attended voluntarily. The agenda for the meeting was to develop strategies for improved research in the midst of work overload and sustained high performance in lecturing and student support.

Data collection

First stage: The first part consisted of observations from the deliberation of the focus group meeting. Each delegate mentioned their weaknesses and strengths. They shared their research progress in manuscript preparation. About 9 delegates informed that they had incomplete manuscripts. Reasons for incompletion were lack of time and dearth of ideas for novelty. Strategies were generated to improve research in the departments. Two delegates

shared the programme directorship and everyone had a slot to contribute. Speaking got its time from each delegate and listening was also affective. These led to healthy discussions. Also, the blending of several disciplines and experiences was found to be synergistic.

Second stage: The next data collection consisted of circulating an interview guide to the delegates to ask what the benefits of their focus group were what it lacked, how it could be improved and ways of inspiring its success going forward. The delegates mentioned the benefits and strengths of the focus group meeting and suggested measures for enhancing the success of the efforts. The strengths of the meeting included the diversity of experiences, knowledge, optimistic spirit, willingness to share, preparedness to learn and the encouraging attitude of the delegates. Also, equality of partners from the involved departments as well as the mutual respect afforded one another; provided a useful platform to exchange ideas. The members also suggested ways to continue the efforts to enhance research success.

Data analysis: The analysis was based on observing the focus group meeting deliberations in the first data collection phase. This was followed later by the thematic content analysis of the qualitative responses collected through the emailed question guide. In both data collection phases, the respondents had been the members who had attended the research meeting.

Focus group: Delegates were willing to participate. Each member had some useful facts to share. Many delegates provided unique ideas from individual experiences which gave the discussions some value to each delegate. Information that was shared extended towards research funding available on SMU campus and ways to apply for it. Blending of issues through technologies from computer science was also beneficial. Delegates were also reminded of the SMU research day that was being advertised. The focus group pointed at the bias of manuscript adjudication during the SMU research day. Apparently, adjudicators never even visit stalls at which mathematical sciences manuscripts are placed due to both lack of interest and lack of knowledge in these disciplines.

Second stage: The responses agreed that convening the focus group meeting was monumental. Identification of the problems and weaknesses that disrupted research was also made. This led to soliciting solutions from various colleagues to resolve the problems and backlogs. Delegates also resolved to restore motivations and efforts to improve research. The delegates also found continuous engagements as necessary to review progress and to awaken one another for progress. Drawing from many academic disciplines using communication was a synergistic platform in a crowdsourcing focus group. The respondents also suggested beneficial practices to adopt in continuing the efforts to enhance their successes. The first strategy resolved was to start with incomplete manuscripts and then to research around them to lead to their finalization. The second one was to solicit author partnerships where a dearth of ideas was shown. Indications were that delegates were willing and prepared to share and they took turns to deliberate. They pointed at the need to ensure that motivational efforts are constantly enhanced. They also suggested the continual identification of emerging problems that disrupt research activities. The suggestion to use alternative venues for research meetings was also proposed. The focus group meeting was applauded as a research initiative to successfully promote crossdisciplinarity research, thus, encouraging networking among researchers and be able to share ideas.

RESULTS AND DISCUSSION

The results showed that the delegates found all the information shared about research to be beneficial. The mixed responses occurred where some responses showed discontent regarding information that was not directly on research. Some delegates found such information were less or not beneficial for general research idea sharing. The information included issues of rotational headship for academic departments if they could assist research (and teaching) in SMU. Some of the responses reject the rotating headship idea as irrelevant in research revival or departmental management as there were few experienced members and they viewed heads of the departments at the time were also involved in research.

The respondents also suggested that the information during research sessions should be restricted to research and that other research-irrelevant information or activities be excluded. Further suggestion counsels that invitation and agenda for such meetings should be distributed to invited people in advance and be critiqued or amended for focus. The secondary invitation instead of a direct invitation to every delegate was discouraged. The responses proposed that every guest is approached as the colleagues who extended the invitation did not ensure that every delegate knew in advance what was on the agenda of the meeting. Knowing in advance about the meeting agenda items was viewed as vital for best preparation from every delegate.

Proposals suggested by delegates for improving research also included brief knowledge sharing about different parts of research during the meeting. An alternative to this approach was scheduling about 2 to 3 hours research workshops regularly for research knowledge and experience sharing. Suggested frequencies of the meetings were fortnightly, monthly and bi-monthly.

The meeting was pronounced to have been successful. All the respondents indicated that they were inspired. They also found to have expanded their research motivation and capability to a higher level of proficiency. The contributions of fellow members were embraced, respected and valued. Everyone contributed something and everyone gained something. The result was an increased outcome of synergy which led to a blended magnified effort that resulted in a formal research study. The meeting was adjudged to have produced more benefits and a platform for future performance. Areas requiring to be improved appear in the recommendations.

The conditions of successful research improvement meetings showed that crowdsourcing efforts for crossdisciplinarity, interdisciplinarity, multidisciplinarity and transdisciplinarity could be beneficial for research planning. Also, communication barriers have to be improved. These can include timeous planning, involving more delegates in the planning and distributing the agenda beforehand. Speaking and listening received their fair shares in discussions.

Everyone was willing to participate. Little knowledge from each delegate was found to have contributed to a massive pack of work worthy of being distributed. The data collection from the focus group meeting was triangulated using a follow up interview guide soliciting responses and distribution of the initial draft manuscript to members for verification and fortification of the facts presented. This was an evaluation of knowledge transfer between science disciplines in line with Rinia *et al.* (2002) account. Communication was the key to the successes that emerged. The synergy of the focus group meeting was the result of the ideas of many dimensions (Sanz-Menendez *et al.*, 2001).

According to Porter *et al.* (2006), colleagues' efforts initiated to reignite progress should be nurtured and their meaning increased. This nurturing was proposed by several responses in the second phase of data collection. The inclusion of technologies was cheered as a trend in blended learning of the modern education systems in developed economies. According to Morillo *et al.* (2003), this trend is valuable in the sciences. Strategies emerged from the meeting to improve results. Specific examples also emerged to assist the research efforts for the short-and medium-terms.

CONCLUSION

Crossdisciplinarity, interdisciplinarity, multidiscip linarity and transdisciplinarity featuring in the same crowdsourcing session can create a synergistic relationship. They can optimize the potential talent of individual academics. Academics from different disciplines can work together for revitalization and motivation to embark on research. These settings, serving as pedestals for communication, stand to enable idea sharing. The conditions where there are no barriers to communication, however are necessary. The platforms should also encourage good listening for receiving messages and an opportunity for each member to talk about sending a usable message to the gathering of crowdsourcing.

RECOMMENDATIONS

The study provides the following recommendations to assist improvement in research. There should be: regular meetings to monitor and evaluate research progress of individual syndicate members in order to intervene where necessary; special meetings when ideas have been generated from members with a view to benefit continually towards improving research output; and more relevant partners involved in value-adding discussions including those coming from outside SMU.

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