

Exploration of an Innovative Curriculum and Pedagogical Approaches for IT Students

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Abstract

This empirical research explores a cutting-edge curriculum and instructional methods that are relevant to IT students in general and Saudi IT- students in particular. The respondents were asked objective questions to obtain extensive information about the topic. In addition, they were asked open-ended questions to reveal their intensive opinions about the topic. Such empirical surveys were conducted on IT-students/faculties and professionals to ascertain what language skills and professional abilities the IT students really need to enhance in their educational and occupational domains. The overwhelming empirical findings indicate that the IT-English-curriculum needs to rely on integrated language skills, vocabulary and communicative grammar that are embedded in IT contents. With regards to the instructional methods, it was found that the ESP educators need to adopt such pedagogies that pertain to collaborative approach, learners-cantered and tasks-based instructional methods to let IT-students get adequate opportunity to communicate with their counterparts in their academic domain.

1. Introduction

To investigate the most relevant IT-English curriculum and the most effective pedagogy hardly culminates without the process of identifying and evaluating the IT- English learners' educational and occupational needs. The quest for efficacious teaching materials relies on an investigation of a vast spectrum of learners' educational and occupational needs. The existing IT-English curriculum if any needs to be cross-examined to make it more relevant and productive for the learners. The needs and proficiency levels of IT-English learners vary worldwide. For instance, the needs and proficiency levels of Saudi IT- English learners might be different from those of other countries. Hence, the IT- English students and IT professionals might perform very well if they are bilingual. So, any IT- English curriculum which is the amalgamation of local as well as global needs will be highly proactive. Therefore, any IT-English curriculum that lacks local colour will not be so productive. The most significant part of designing a relevant and effective curriculum relies on needs analysis because it helps the course writer to integrate their teaching inputs that equip learners with abilities and skills of both educational and occupational spheres.

Needs analysis must precede designing an ESP curriculum. More so, it is prerequisite for Saudi IT – English students whose previous exposure to English is sporadic. Another big problem for Saudi IT English students is their limitation of time. So, while pursuing their core IT courses, they have a very tight English schedule. Therefore, before taking any academic venture to design an academic IT English curriculum, a course designer needs to keep in mind the aforesaid limitations. Therefore, any IT-English curriculum that transpires after thorough investigation will enrich the IT-English students' language skills and professional knowledge that can substantiate their academic or job-related function within specified timeframe.

A scrutiny at the literature shows that there is a dearth of studies on curriculum and instructional methods that are relevant to IT students in general and Saudi IT- students in particular. Therefore, the lack of studies on this topic motivated us to do this empirical research to explore an innovative IT-English-curriculum and instructional methods that are well suited to Saudi IT- English learners. This is undeniably true that any IT –English course book cannot be relevant and productive if it doesn't coincide with the target learners. Hence, it is essential to

keep in view the Saudi IT-English learners' proficiency level, their academic and professional skills within Saudi context.

The designing of an effective curriculum depends on learners' proficiency level that varies worldwide. After insightful observation we found that the IT-English curriculum and the instructional methods might be more effective if an intensive evaluation of Saudi IT learners' proficiency and their professional needs are done. The IT-English course books prescribed in Saudi universities need to be analysed thoroughly to obtain better learning outcomes. The students of IT-discipline need more relevant and productive curricula well suited to the IT-learners' academic and professional needs.

IT-students need ESP course as a strong resource while pursuing their IT courses because around 50% students enrolled in IT- courses are incapable to cope with the dire and pressing needs of linguistic competence. Their linguistic competence will facilitate the pursuit of their higher studies abroad and substantiate their professional career. Therefore, a sound IT-English course is highly recommended for IT students who have low proficiency in English and yet enrolled in computer related courses. The perception that General English Courses alone can't enhance the level of linguistic competence the Saudi IT learners need in IT courses is justifiable, because the linguistic proficiency of some students is far below the required standard when they join the university as freshmen. So, an English course for IT-students needs to be cross-examined and customised in line with the needs and linguistic levels of IT learners.

The cultural aspects and their professional needs should not be ignored while designing the curriculum. Therefore, the best model for IT English curriculum needs to be based on an analysis of learners' extensive and intensive needs, because it identifies their essential educational and professional needs. Such empirical analysis will pave the way for the best and the most productive IT - English curriculum that are well suited to their professional settings. It also worth mentioning that an English course book will be more relevant and useful for IT – students if it is embedded in IT contents.

In fact, Saudi school graduates before getting enrolled in the Saudi universities should be given more opportunities to enhance their communication skills, because they had less exposure to English that are responsible for their inability to cope with their IT domains. Therefore, they are unable to understand IT- course books independently and perform less than expected. This forces us to undertake this venture to explore the best English curriculum and the most effective instructional methods that correspond well with Saudi IT students. The effectiveness of teaching will be reinforced if an ESP educator improves his awareness about IT and interact with IT faculties regularly.

1.1 Literature Review

Needs analysis is the hall mark for designing a sound and an effective ESP curriculum. Similarly, the needs of IT English students have to be investigated to find out what levels of English they need to do well in their academic and professional fields. This is what earlier studies have also recommended. It was Munby (1978), who came up with pioneering insight about needs analysis before designing an ESP curriculum. According to him needs analysis is significant for making an ESP programme more relevant and productive. His perception of needs analysis is pertinent to set of needs the students of ESP courses require in their educational and occupational domains. Robert Phillipson (1992) focused on contextual and functional needs to make ESP courses context based. Swales (1990) also gave importance to learners' immediate needs to address their linguistic problems. The indispensability of needs analysis was also realized by Kennedy (2001) while working on the best ways to design the most relevant curriculum.

Emphasizing the importance of target situation, Gatehouse (2001) stated that first learners' target needs to be identified to design the best curriculum accordingly. Language inputs for teaching have to be selected to best suit the target. The best curriculum will emerge after the insightful investigation of ESP learners' target situation.

Harmer (2007) and Master (2007) favoured the analysis of needs before taking venture to design ESP curriculum. According to them academic as well as occupational needs must be kept in mind before designing any ESP academic courses. Graves (2008) pointed out that an ESP educator needs to evaluate and investigate what to be taught for a certain ESP group of learners. For him to undergo such process is prerequisite to make the curriculum more relevant and effective. This was further strengthened when Basturkmen reflected that the rigorous analysis of needs plays a significant role in evaluating and designing ESP course. Chovancova (2014) concluded that even the pre-service students should be consulted to know their needs and what they need English for to make the courses realistic and productive. With regard to the effectiveness of pedagogy, many ELT specialists recommended the implementation of context-based pedagogy in ESP classes. Maggie and Diane (2016) also endorsed context-based teaching and context-based curriculum. Platzer and Verdonk (2011),

Gözüyeşil (2014) and Teekens (2004) advocated the integration of integrated language skills in ESP classes. So many researchers focused on communication skills in ESP settings. For example, Darling and Dannels (2003) conducted a survey on 123 mechanical engineers in the United States of America and concluded that engineers in industry work are in need of an “oral culture” however acknowledged that “good writing skills were also in demand” Spence and Liu (2013) worked on teleconferences, events, and oral presentation in engineers’ professional fields. Earlier researchers also found pronunciation as one of the problematic areas for non-native ESP students. Pronunciation and intonation were also identified by Webber (2005) as the major problems for ESP students in non-English speaking countries. Slepovitch (2002) and Tatzl (2012) found Austrian engineering students pronouncing engineering words incorrectly while giving academic presentation. Murphy (2004) also observed some ESP students speak with inaccurate accent and word -stress that affect the intelligibility of their communication. For an ESP instructor to be effective he must have some qualities as suggested by Dudley Evans (2006) to perform different roles in ESP pedagogical set-up. According to him, an ESP teacher needs to be inquisitive teacher and collaborator who tends to encroach his knowledge about learners’ specialization. According to Sager (1990), Vocabulary teaching is also one of the important aspects of ESP teaching.

1.2 Hypothesis

It is hypothesized that the best curriculum for IT- English will be embedded in IT related contents so that IT students can perform well in their educational and professional domains. Vocabulary and grammar pertinent to IT need to be incorporated in IT-English curriculum. The instructional methods should include learners-oriented teaching thereby giving more opportunities to learners to enhance their language skills. The present hypothesis related to IT- English curriculum consists of the following statements:

1. An ESP educator should analyse learners’ needs before designing an IT-English curriculum.
- 2-IT-English curriculum should be based on IT- related contents and activities.
- 3-IT-English curriculum must include language skills and grammar components.
- 4-IT-based vocabulary teaching must be an integral part of the curriculum.
- 5- Dialogue writing should be embedded in IT contents.

The present hypothesis related to instructional method consists of the following statements:

- 1-An IT English teacher needs special training to teach IT -English effectively.
- 2-He needs to collaborate with IT teachers to know IT learners’ academic and occupational needs.
- 3-An IT English educator needs to improve his awareness and speaking skills in IT fields.
- 4-An IT -English educator must be able to customize courses in line with IT learners’ proficiency level.
- 5- An ESP teacher should prefer communicative approach to grammar teaching. .

2. Materials and Methods

The primary and secondary data are the two basic constituents that were used to know the nitty gritty of the research. These tools are significant for empirical research because they assist the researchers to delve deeper to obtain new findings. In this empirical research we are most likely to explore what would be the best IT-English curriculum and the most relevant teaching methods that substantiate IT –students’ academic and professional needs.

2.1 The Quantitative Survey is the Basic Tool of Experimental Research that Explores the Overwhelming Responses of Respondents.

With a view to carrying the quantitative survey, the respondents were given some statements pertinent to the best IT-English curricula and the best teaching methodologies. The aim was to elicit the experience laden feedback from male IT- English faculties and students at the universities of Saudi Arabia. It was next to impossible for male researchers to conduct any empirical survey on female counterparts owing to their adherence to religious values. Hence, the empirical survey was conducted on male participants only. With a view to obtaining primary data, some structured statements were administered on randomly selected IT students and faculties of the universities of Saudi Arabia.

2.2 Secondary Data

Online resources were navigated to obtain secondary data. The extensive online resources such as ESP books and empirical research papers were found interesting to bolster the present research. The extensive reading materials were obtained from the following authentic online resources.

2.2.1 Online published empirical research papers pertinent to IT-English curriculum and instructional methods well suited to IT students.

2.2.2 Books on the best IT-English curriculum and instructional methods related to IT students.

2.2.3 Curriculum plans of Saudi universities relevant IT-English curriculum and instructional methods well suited to IT students.

2.2.4 Magazines and newspapers were navigated to get current information regarding the said topic.

2.3 Data Collection Methods

The methods for data collection were based on empirical surveys. The quantitative and qualitative surveys were used to elicit the overwhelming responses of the respondents. The two surveys were carried on both IT-English faculties and learner to obtain responses and arguments regarding the present research. First a quantitative survey was conducted to collect the comprehensive responses of IT students and ESP educators in large numbers on present research which determines statistically analysable probability value. The arithmetical analysis was used to derive the exact or nearly exact conclusion on the basis of respondents' feedback and observations. There is no denying the fact that quantitative survey is the most reliable means to collect the overwhelming responses. Cohen, Manion, & Morrison (2007), strongly support the quantitative survey that is used to elicit the comprehensive responses of the participants. However, numerous empirical studies illustrate that just a collection of numerical data is not sufficient because it gives inadequate picture of the context. Therefore, it will be more authentic to follow Pintrich and Schunk (2002) who realized "the nitty-gritty of the numerical data and recommended qualitative survey as well to obtain the most reliable and valid conclusion. The qualitative survey could be conducted to delve deeper by having individual interviews and group discussion." This empirical research adopted a 5-point Likert scale to measure the respondents' level of agreement and disagreement about the statements.

2.4 Data Analysis

The collected data were analysed statistically. With a view to getting exact empirical conclusion, tables and figures were used for data analysis. The overwhelming responses were analysed in percentages to explore statistical findings with regard to the relevant IT-English curriculum and instructional methods. One thousand respondents including IT students and ELT and ESP teaching faculties of Saudi universities took part in the present research and came up with their responses forthrightly. The participants were asked to check strongly agree/agree/do not know/disagree/strongly disagree on the statements related to the best IT-English curriculum and instructional methods.

3. Results and Discussion

The empirical surveys were conducted in this research yield remarkable findings that open a broader spectrum about the best IT-English curriculum and innovative instructional methods. The inclusion of a comprehensive linguistic components and effective teaching methods enhances IT- students' linguistic skills and their professional competence. The findings are valid not only for Saudi IT students but for IT students across the globe. The overwhelming and insightful responses that emerged from both quantitative and qualitative surveys are scientifically explained below:

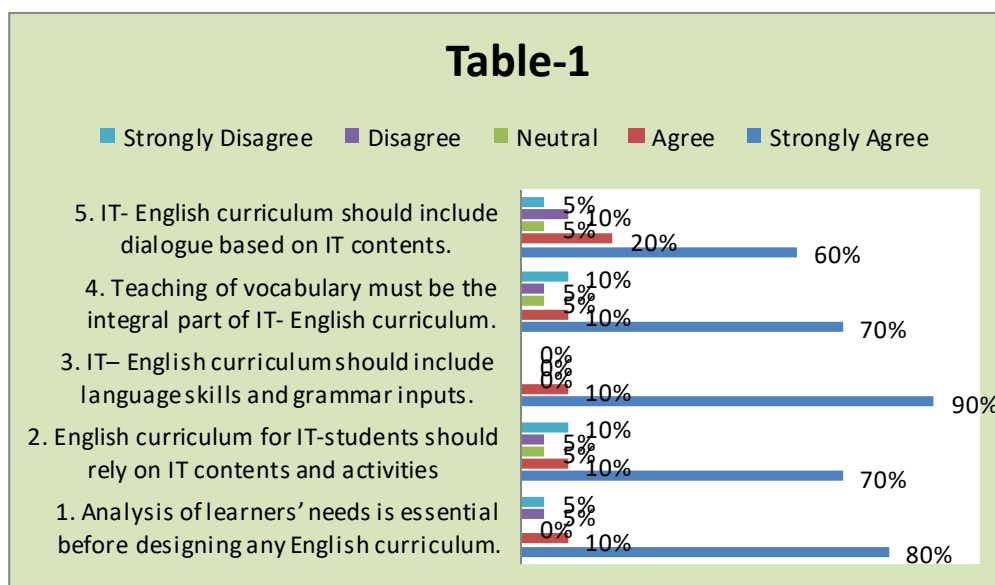


Figure 1. quantitative survey about how to design the best IT-English curriculum

Table 1. Quantitative survey about how to design the best IT- English curriculum

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Analysis of learners' needs is essential before designing any English curriculum.	80%	10%	0%	5%	5%
2. English curriculum for IT-students should rely on IT contents and activities.	70%	10%	5%	5%	10%
3. IT- English curriculum should include language skills and grammar inputs.	90%	10%	0%	0%	0%
4. Teaching of vocabulary must be an integral part of IT- English curriculum.	70%	10%	5%	5%	10%
5.IT- English curriculum should include dialogue based on IT contents.	60%	20%	5%	10%	5%

Participants' overwhelming responses and their valid logical justifications about the first statement of table.1 necessitates needs analysis before taking any venture to design a relevant IT- English curriculum for the students and employees of IT department. 90% of the respondents considered the indispensability of needs analysis in the quantitative survey. To them, it is an essential step before designing an IT- English curriculum. Needs analysis is an important means to confirm learners' educational and occupational needs and then to design the curriculum accordingly. That is why only 10% respondents went against the statement. The qualitative survey further strengthens the overwhelming response of quantitative survey. The educated ESP practitioners and IT teaching staff agreed in group discussion that a relevant IT-English course is not possible without an intensive investigation of IT students' academic and professional requirements. One of the qualified ESP educators opined that needs analysis is inevitable to make IT- English curriculum more relevant and effective. Another faculty member's arguments are also worth mentioning. He said, "*needs analysis will identify Saudi IT students' language skills and professional needs that they have to face in their educational and occupational domains*".

This is unequivocally true that the demand of English and IT-students' proficiency level differs from country to country. Therefore, similar IT-English textbooks that might be appropriate in English speaking countries might not be so effective in Saudi context. This variation that needs to be kept in mind before designing any IT-English curriculum can be identified only through needs analysis. Therefore, without needs analysis, an ESP teacher alone cannot predict the exact IT students' linguistic proficiency and their professional demands that they need to accomplish to do well in their academic and occupational pursuit. Thus, quantitative, and qualitative surveys

need to be conducted to identify the linguistic proficiency and professional skills the IT students need to improve. Besides, needs analysis will also ascertain the level of grammar the Saudi IT students exactly need in future. This will guide course designers to customize IT-English curriculum according to the proficiency level and the language components the IT students need to improve both their educational and occupational English.

The responses towards the second statement bring to notice the relevant contents that have to be introduced in IT English curriculum. 80% participants were found in favour of the IT related contents and tasks-based activities. Only 15% respondents were found opposed to the statement. It is indeed true without any iota of doubt that IT related contents and tasks-based teaching will strongly facilitate IT students educational and occupational English. IT related contents will be drawn on core IT syllabus in collaboration of core IT faculty members. In addition, tasks-based activities will provide IT students with enough opportunities to learn independently and confidently. Tasks based teachings are based on learners'-oriented teachings which are designed to focus on how learners improve their linguistic and professional skills effectively. To be more specific, the IT-English curriculum based on IT contents will reinforce IT related knowledge, IT related lexical words, thereby enriching their speaking and writing skills.

The arguments of participants in qualitative survey made it crystal clear. In group discussion, they concluded that IT students' repeated exposure to IT related contents and vocabulary will improve their knowledge and spontaneity to speak in IT context. Almost all the research findings certify that IT English shouldn't be taught as general English or as a separate entity, instead, it has to be integrated into IT contents that are equally important for IT students. Therefore, by introducing contents-based syllabus, the learning process will be more productive and rewarding because they learn English in context.

Introducing tasks-based activities aiming at the improvement of integrated language skills, grammatical components and generative vocabulary immersed in IT contents will improve IT students' educational as well as occupational needs. Learners oriented teaching incorporating task-based activities will turn learning more exciting, reflective and productive. Besides, tasks-based activities conducted through peer to peer, group activities and collaborative learning activities will make learning more dynamic and independent.

The overwhelming responses of the third statement strongly supported the inclusion of integrated language skills and in-depth grammar components in IT-English curriculum. Almost all the respondents agreed with the statement. The overwhelming majority approved skills-oriented teaching and communicative grammar teaching. Their arguments in qualitative survey are valid and justifiable. It was found that some of the ESP course books containing just lexical words are boring and unexciting. The need to incorporate the teaching of pronunciation in listening skills also emerged while interacting with Saudi IT-students. Saudi IT students were willing to learn accentual patterns and word stress, so that they can speak well and understand well the native speakers of English. In fact, incorrect pronunciation will make them abysmally disappointed in global context. Moreover, they will face difficulties to understand PowerPoint presentation in international conferences held worldwide. With better pronunciation, IT students can communicate well across the globe. Another reason to incorporate pronunciation is to make IT students pronounce IT words correctly. So many IT English words are non-phonetic because some IT words are not pronounced the way they are spelled.

The Participants also favoured the integration of communication-skills into IT English courses so that they can enhance their communication skills. They will better build their professional career if they are good at communication skills, because they can successfully interact with multinational professionals. With a view to enhancing communication skills, tasks-based activities such as peer-to peer and group discussion and PowerPoint presentation need to be taken into account while designing IT English curriculum. Effective communication skills will enable Saudi IT students and professionals to share their expertise with their counterparts across the world. In addition, tasks-based activities will enable IT students to publish their research studies in English. The IT-English curriculum needs to include some important grammar components thereby enabling IT students to write grammatically correct sentences.

The analysis of grammatical errors will boost a great deal the students' sense of propriety and accuracy in writing skills, making errors free script. In fact, lack of propriety and grammatical accuracy are responsible for their inability to build their sound educational and professional careers. The massive responses to the fourth statement are significant. 80% participants agreed with the integration of IT vocabulary teaching, whereas only 15% respondents were found disagreeing with the statement. The arguments of the respondents in qualitative survey are valid. They recommended multiple ways for vocabulary teaching. For instance, matching of words –meanings, changing of nouns into adjectives and vice versa, making of sentences, and so forth. They are of the view that without sound vocabulary no improvement can occur. The IT-students need to practice IT related

words and phrases. They also opined that it is with vocabulary they can speak and write well. In fact, vocabulary teaching can help IT students a great deal.

In response to the fifth statement, 85% respondents supported the inclusion of dialogue (conversation) based on IT related topics which will reinforce their knowledge about their own topics. Their extensive and intensive knowledge about their own topics will add to the improvement of all integrated language skills. If dialogue segment is embedded into IT contents, it will immensely enhance their educational and occupational fields.

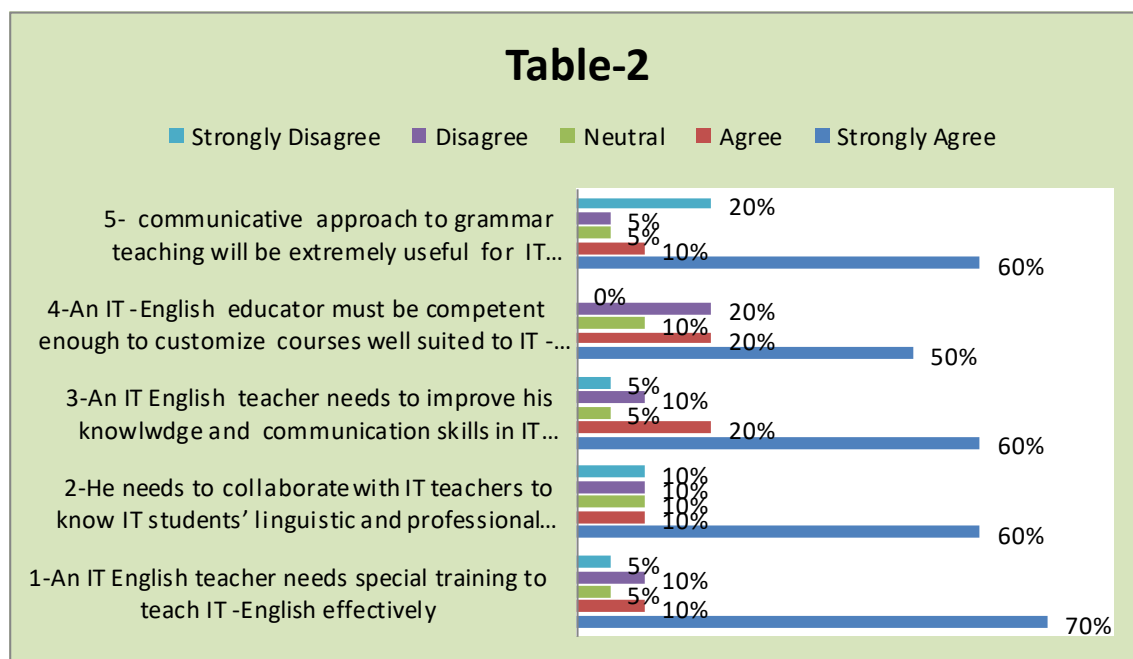


Figure 2. Quantitative survey about the best instructional methods for IT students

Table 2. Quantitative survey about the best instructional methods for IT students

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1-An IT English teacher needs special training to teach IT -English effectively.	70%	10%	5%	10%	5%
2-He needs to collaborate with IT teachers to know IT students' linguistic and professional needs.	60%	10%	10%	10%	10%
3-An IT English teacher needs to improve his knowledge and communication skills in IT domains.	60%	20%	5%	10%	5%
4-An IT -English educator must be competent enough to customize courses well suited to IT - English students.	50%	20%	10%	20%	0%
5- communicative approach to grammar teaching will be extremely useful for IT students.	60%	10%	5%	5%	20%

The second survey investigates how an ESP educator with special training can teach IT students more effectively and productively. The overwhelming responses of participants are worth noticing. 80% respondents agreed with the statement. Only 15% participants were found disagreeing. According to them, an IT English educator needs contents based and skills-based training to make his teaching more effective. An IT English educator can facilitate IT students a great deal if he knows well what kinds of knowledge and skills IT students need in their educational and professional fields. He can prioritize the teaching of those linguistic skills that can build IT learners' career. Hence, the needs of special training will be more effective in IT context rather than general context. Numerous insightful arguments emerged from the focus groups in qualitative survey. They unanimously concluded that an ESP educator should enhance his knowledge about IT-contents and vocabulary so that he can have enough confidence to instruct IT-students and foster a stimulating ambiance in IT- English classes. His awareness about IT related topics and vocabulary will be immensely productive for an effective teaching. His performance will be better than those teachers who lack IT-related awareness and vocabulary. Being a privileged teacher, his teaching will be more relevant and productivity.

The responses of the second statement in the quantitative survey draw attention to the concept of collaborative teaching. The second survey reveals that 70% respondents supported an interdisciplinary approach towards IT-English teaching. An ESP educator needs to collaborate with core IT faculties to know more about what will go well with IT students' educational and occupational world. The findings of group discussion and interviews are in favour of collaborative approach. The respondents argued that collaborative approach will make them aware of IT learners' immediate language needs. Therefore, an ESP educator will customize his pedagogical contents well to meet the learners' educational and occupational needs.

The responses of the third statement are also interesting to note. 80% respondents agreed that an ESP educator needs to improve his communication skills in IT context. Only 15% were found opposed to the statement and 5% respondents were found neutral. The arguments in qualitative survey are quite convincing. They asserted that their knowledge about IT contents and vocabulary will improve their communication skills in IT context. And their communication skills in IT context will enhance the effectiveness of teaching. It has also emerged from the group discussion that an ESP educator needs to make the best use of IT related information and his linguistic competence when he teaches IT learners and professionals. Their teaching will be more productive if they have command on IT contents, terminologies and registers frequently used in IT world. The explanation of IT related vocabularies will be misunderstood if he himself becomes the victim of any conceptual confusion. The most important aspect is that IT students will learn English that is fully embedded in IT related contents.

Responses of participants in the fourth statement are incredibly significant. 80% participants agreed that the ESP educator must be competent enough to customize IT English courses. Only 20 % participants did not stand with the statement, whereas 10% were found neutral. The arguments of the qualitative survey are well reasoned. Almost all of them concluded that it will be better if an ESP educator has the ability to customise his teaching materials according to the IT learners' proficiency level and their educational and occupational needs As a matter of fact, an IT English curriculum needs to be customized be tailored to cater for the needs of IT groups of learners during a small duration. With a view to designing a relevant IT English curriculum an ESP teacher should have regular interaction with IT faculties. This will, indeed, facilitates an ESP educator to prepare the most relevant IT English course. It will also ensure a spectacular success in teaching. Sometimes an IT English teacher should use the images of IT terminologies so that IT students quickly understand the words with clarity.

The fifth statement is related to the use of communicative approach to grammar teaching. 70% respondents supported communicative approach and learner centered approach to grammar teaching whereas 25% opposed the statement. And 5% participants were found neutral. The arguments of the overwhelming majority in qualitative survey are indeed cogent and convincing.

According to the participants, the most inspiring educator is a "guide on the side rather than a sage on the stage". It is better to consider himself as a facilitator rather than an absolute authority. He should give IT students more opportunities to communicate freely. IT learners will improve their knowledge and linguistic skills if he provides IT learners with ample opportunities to share their linguistic expertise. In addition, IT students will also learn with such engaging activities, On the contrary, teachers' nonstop teaching will turn the whole learning process unexciting. With a view to implementing communicative approach an IT English educator should begin his teaching with some questions to engage learners in the process of brainstorming to improve their communication skills. The basic aim is to instil in learners an intrinsic motivation to improve their professional skills they really need in their professional career. Hence, the teacher should facilitate the whole learning process to make learning happen effectively.

4. Conclusion

The sole purpose of the current research is to empirically explore an IT- English curriculum and instructional methods which are relevant and best suited to the IT students of Saudi Arabia. It has emerged from empirical surveys that needs analysis is essential prior to any venture for a sound curriculum. Needs analysis ascertains the exact language and professional skills that an IT student needs to perform well in his career. The findings also suggest that IT-English curriculum must be more relevant in terms of skills development. In other words, the IT-English curriculum needs to incorporate IT-related paragraphs, lexical words, generative vocabulary, and communicative inputs. The second aspect explores the effectiveness of teaching and learning in IT classroom. The overwhelming responses and the cogent arguments of the participants reveal some invaluable teaching strategies that can make an ESP educator triumph and receive lots of admirations from IT students. The empirical findings of the current research also suggest special training sessions for ESP educators, collaborative teaching, learners cantered rather than teachers cantered, integration of visuals in teaching IT students.

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