# An Improved Model for the BSC ECP Administration

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**Abstract:** The current model for running the Extended Curriculum Programme of the Bachelor of Science (BSc ECP) was an attempt to increase access into the science programmes. This BSc ECP Model was also an attempt to improve past models which were planned to increase science and engineering graduates. However, it fails to provide the desired results at same levels as the mainstream BSc programmes. When it was introduced, the BSc ECP was expected to produce the BSc degree for the ECP and mainstream groups of identical quality standards and pass rates. Currently, discrepancies seem to be showing though with, higher throughputs emerging from the mainstream groups. When the two groups start mixing at the BSc II level, the differences are that the mainstream groups show superiority in performance. One of the identified causes is the long pause from learning in some subjects that the ECP groups have.

**Key words:** Pass rates, student support, throughput, proposed, envisaged

## INTRODUCTION

Student's pass rates at South African universities, especially, in the sciences, seem inadequate to significantly reduce the skills gap in the country. This is worsened initially by the fact that students admitted in the study programmes for the scarce skills are generally, much higher than those ultimately graduating. It is then persistently necessary to admit more students in the scarce skills programmes and also intensify teaching and Student Support Services (SSS) in order to increase pass rates. The democratic political dispensation in South Africa also called for the increase of black students and most particularly those from rural areas (Mattes, 2015). According to Mattes and Bratton (2007), these are the most under prepared students due to deprived backgrounds where schools have no learning facilities.

Since, 1994, there have been drives to enable more access to higher education to increase experts in scarce fields and skills such as accounting, sciences and engineering, among others (Odhav, 2009; Takalani, 2008). One substantive initiative in higher learning was to augment the student admissions in these study programmes to accelerate their growth. The ECP curricula were introduced for applicants to study programmes identified as having potential to complete the programmes when assisted beyond normal learning modes. At the Sefako Makgatho Health Sciences University (SMU) in South Africa also, the ECP curriculum was introduced to strengthen the programmes offered on campus. These programmes have been extended only in their 1st years. The first year of each programme is offered over 2 years, thus, extended by 1 year, in an attempt to assist in reducing or eliminating failure.

**BSc ECP:** The mainstream Bachelor of Science (BSc) degree in South Africa is a 3 year degree. In SMU (and other universities locally), pass rates in the BSc degree were viewed as unsatisfactory due to the desperate need to increase the numbers of science graduates (Netshifhefhe *et al.*, 2018). SMU offers the BSc degree under four streams: Life and Molecular Sciences, Mathematical and Computational Sciences, Occupational and Environmental Sciences and Physical and Mineral Sciences. The BSc ECP was introduced for students who did not fully satisfy the set entry requirements but missed the entry by a marginal difference. In this programme, the first year BSc modules are taught over a period of 2 years. The first semester part of each module is taught over a full academic year. The third year of the BSc ECP coincides perfectly with the second year of the BSc. From this level onwards, the two programmes are presented together until the BSc exit point. The Bsc degree awarded for both the mainstreamers and the ECP groups is therefore, the same degree.

One concern about the ECP groups at the time they join the mainstreamers at BSc II level is that the content used in the first semester would usually have been done 2 year ago. The lecturers often complain that the ECP

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students have forgotten what they needed to use in the new content to be learned. This study then focused on determining an alternative and improved way to present BSc ECP in such a way that the content they need for learning new content can be recalled with relative ease as is the case with mainstreamers, to give a module that is exactly as it is for the mainstreamer (including same lectures and practicals) and to also enable higher pass rates that match the mainstream ones.

**Pass rates:** Some perpetually failing students are forced to forfeit the studies due to applicable rules. For example, at some universities, a student who fails a degree level or module more than once may be expelled on poor academic performance (Crosling *et al*., 2009). Therefore, students who may be required to leave the programmes which they fail perpetually can be either due to failure to progress in a study programme or failing a single module several times (Boughey, 2010).

Over the years, pass rates in the sciences have shown to be lower than in the humanities and other closely related study programmes at tertiary level. Undesirably low pass rates in the mainstream study programmes are the reason for interventions such as the ECP. Ramarumo (2017) showed that failure rate in the ECP is much higher than in the mainstream BSc. This trend is similar to occurrences in other South African universities for similar extended BSc degrees (Borg, 2010), even where the names for the extended degree may be different. However, other universities seem to approach their student facilitation of lectures in a more improved form. Many of them, for example, train the lecturers in teaching methods and/or use more experienced facilitators who over the years would have demonstrated teaching excellence. The observations also emphasise that this is to a disappointing low that renders the ECP contemptible for the reason that it was introduced. The low pass rates in the BSc ECP are therefore, barriers to increased science graduations. They are certainly the barriers to completion rates escalation.

**Throughput:** Completion rate refers to the proportion or percentage of students who graduate within the maximum permissible duration for a programme of study (Belch *et al*., 2001). Graduations are the result of study programme completion. Furthermore, throughput is based on completion but with some variations from pass rates and graduation rates. Throughput rate is the number of students who passed out of the total number of students who sat the examination (Sondlo, 2014). It basically refers to the number of students who are enrolled in a study programme and are actively engaged in teaching and learning activities and complete the course within minimum or maximum programme duration (Boughey, 2005).

**Idea generation:** The clue is to develop a model that could still give the extended year to the BSc for the under-prepared groups but ensuring that the lapse in the year before joining mainstream groups is prevented. The BSc ECP I and II are structured to be offered over a longer period. They both constitute BSc I. They are presented by a separate group of lecturers. At least three lecturers are involved at this level. The questions posed for BSc ECP is "Why split to teach over a slower period?", "Does this not train students to be lax during learning?" and In the understaffed SMU where deans sometimes cannot motivate for staffing, "How can an innovative way be found to use only one lecturer for the same BSc I content at BSc ECP I and II?". This study advances a response to this question.

## MATERIALS AND METHODS

**Study area:** The study was undertaken over a period of 20 months, March, 2016 to November, 2017 in the Mathematics stream of the BSc at SMU. Major subjects for this BSc could be in Applied Mathematics, Computer Science, Mathematics, Physics and Statistics with combinations that are permissible in the stream. The focus was on the pass rates of the BSc ECP students who are enrolled with the main aim as to improve graduates in the sciences. Since, the BSc ECP does not involve Applied Mathematics at SMU, this subject was excluded in the study.

**Design:** This was a qualitative study concerned with addressing the ineffective fashion that the BSc ECP was not increasing the science graduates as was intended. It was therefore, important to understand reasons why the initially intended outcome was not realised and to determine if alternative ways could be found to improve BSc intake and graduations as planned.

**Participants:** The study consisted of respondents in two categories. One category consisted of past BSc ECP students of SMU while the second one consisted of some involved academics in the school of science and technology, who were primarily the custodians of the ECP programme.

**Instruments:** The students were asked using a question guide 'what they experienced or could have perceived as the main difficulty when they started joining the mainstream groups at the BSc II level for their BSc ECP III enrolment'. 'The academic's question guide was directed toask why the BSc ECP I and II were structured the way they were?', 'how the outgone extended format known as BSc EDP format was when compared with the BSc EDP?' and 'how the BSc EDP pass rates compared with the BSc ECP ones?'.

Table 1: Responses from BSc ECP students who have encountered the mainstream Bsc

| Computer science | Mathematics | Physics | Statistics |
|---|---|---|---|
| **BSc II** | **BSc II** | **BSc II** | **BSc II** |
| Memory lapse due to year beak | Memory lapse due to year beak | Memory lapse due to year beak | We know we did not perform at matric but they say we have potential. They could limit the number of our modules in ECP but they should give us full modules |
| Lecturers care about the students and make time to be understood | Lecturers not as caring and seem to enjoy student's failure | Students should be taught full modules, even if only fewer | Memory lapse due to year beak |
| Fewer full modules could serve better vs. stretched slow components | Split modules undermine our mental capacity | Instead of using many shorter modules we should be given fewer but full modules | Though the lapse exists, young lecturers give their all for students to succeed |
| ECP structure was not well-thought | The university can improve by using few BSc modules as they are | Some lecturers do not care but more want to really embark on helping | |
| Separate ECP modules lax and lack impetus to challenge mind | Current ECP format does not respect our mental capacity | The separated semester modules reduce our intellectual growth | Slow pace at ECP undertrain students and make them fools |
| | | They also position us below mainstreamers | A full module in one year must be given |
| **BSc III** | **BSc III** | **BSc III** | **BSc III** |
| ECP courses should align fully with the BSc ones | Lecturer pace at BSc is too high for the ECP | Students did modules long time ago | Module facilitation at BSc is too fast for undertrained ECPs |
| Fewer modules for students with potential and adequate student support could have been a better approach | Since, ECP is said to be for students with potential but who performed low at matric we should get BSc modules as they are but fewer and more student support | The BSc structure has no scientific merit for better BSc offering | |
| ECP distracts growth till third year | The slow ECP pattern haunts students for the entire BSc | The current ECP should be abandoned and then replaced by modules of BSc | The mainstream and ECP should be given exactly same modules |
| ECP structure and practice cause low ECP passes at the BSc stage | Structure needs to change fully | ECP students should be given fewer modules to transform, with more effective student support | ECP modules should be fewer but with more intense student support |
| | | Current ECP format disturbs student's progress till end and leads to low marks. It must be changed | ECP structure is a low standard needing change |
| | | | The ECP students can end up being slow even after graduation |
| | | | ECP patterns are not desirable vs. Bsc |

**Ethical considerations:** The respondents were all fully informed about the study details, they participated voluntarily their identities were to remain anonymous and their individual inputs were also required to be confidential. They were made aware of their freedom to withdraw at any time they, so, wished without having to explain their decision. They also signed consent forms prior to participation. Recording was not done because some participants were permitting to be recorded while others did not agree. The decision was then taken not to record their voices in order to ensure uniform practice across all the respondents. The study was undertaken through the permission and approval of SMU Research and Ethics Committee (SMUREC) under protocol SMUREC/S/170/2017:PG.

**Data collection:** The BSc ECP student participants were found in the BSc II and III Statistics classes where they were enrolled as BSc ECP III and IV, respectively. From these participants the study wanted their experiences and their own introspections relative to their BSc counterparts at the same levels. The questions were also asked to the academics in a meeting when they complained that the BSc ECP was not delivering as it was intended. The academics were also asked what they were proposing to improve the situation.

**Data analysis:** The text data were analysed using thematic content analysis of qualitative data analysis in which important themes were used to derive proposals for the alternative model to deliver the BSc ECP.

## RESULTS AND DISCUSSION

**BSc ECP student's responses:** The participating students were in the Mathematical Sciences stream of the BSc ECP III and IV students enrolled for modules in Computer Science, Mathematics, Physics and Statistics which is at BSc II and III levels, respectively. The following respective responses were obtained Table 1.

The students echoed several themes. These participants proclaimed that they lapsed in memory on BSc II concepts done two years ago; BSc course structure favoured only the mainstream BSc as they had done the concepts in the previous year fast study pace in BSc modules is required in the BSc ECP modules that were first year modules broken into halves, BSc ECP felt they were undertrained or previously under-challenged mentally at ECP levels II and III and could not be placed under similar pressures in the BSc, the ECP patterns haunted the students for the entire undergraduate level and some student suggested a change in structure and facilitation of the ECP. The slow pace embedded in the

divided first year modules creates mind relaxation when compared with the challenging format of the BSc I modules. Also, the ECPs want to follow modules taught in the BSc even if it could be on fewer modules. At the third year BSc level, the ECP students seem to believe that they struggle more than those who entered through the mainstream. They indicate to suffer the ECP adversity for the entire undergraduate duration. They also complain about the existing ECP structure that fails to challenge their mental capacity. They also propose a change in structure with same modules and lectures as the mainstreams but with more student support.

ECP II and IV student groups found the structure to lack challenges and pressures that train the mental capacity of the mainstreamers. They strongly suggest changes in format and in facilitation. They propose that fewer modules in a well-thought pattern but with the same module of the BSc and with the same main lecturer should be used. However, they suggest more student support for the BSc groups. They do not have a problem with an extra year on their curriculum as they seem to view it as being advantageous for their development.

**Academic's responses:** According to the respondents, the previous BSc EDP was replaced by the BSc ECP with the hope to improve the throughput rates. The BSc EDP was initiated by faculties of science as access courses, either giving limited credits towards the mainstream BSc study programmes or using EDP for student's access to enrol into the mainstream programme after completion of this level.

The BSc EDP was a simple mix of content for transition from matric to first year BSc. Its content was the advanced content from matric beefed up with introductory content from the first year courses. Most students seem to have benefited because it provided benefits of a finishing school while simultaneously training students for performing once enrolled at the tertiary level.

The BSc ECP was an initiative of the department of higher education. It consists of first year module broken into semester scope. The respondents unanimously stated that the initiative for heightened BSc graduations was defeated as the prevalent BSc ECP was producing much lower pass rates than the outgone BSc EDP. However, some respondents were not assertive to propose a change of the BSc ECP format simply because it was initiated from government's education department to academic level.

Detailed clarification is that the content taught in the BSc ECP I and II are the five modules in the first year of the mainstream BSc degree. Each BSc I module has been split into two modules, one from the first semester and the other from the second semester of the BSc I. This means that the five first year BSc modules have been separated

into 10 modules to be taught over two years. The first semester modules of the BSc I are taught over a full year period for the BSc ECP I. Similarly, the second semester BSc I modules are taught for the whole year for the BSc ECP II level. English is a common module in all the ECP groups.

These respondents indicated that the relaxed form in which the BSc ECP I and II students are trained do not give any benefits towards instilling discipline to the students or their lecturers. Another problem pointed out is that the lapse in the year of BSc ECP 1 and first semester in BSc II make it difficult for the BSc ECP groups. The slow learning pace that these students are used to and the length of time since they engaged with the content, seem not to match the pace and needs of BSc II. Secondly, the BSc ECP students were admitted due to lower matric performance but with indications that they have potential that was not exposed at matric. However, they were not given facilitators who were trained for remedial classes. Similar calibre lecturers at the mainstream BSc were used in the BSc ECP classes. The concern is that even the lecturers who were not convincing in facilitating BSc modules are used to lecture in the ECP modules.

The prevalent SSS is aimed to assist troubled and underperforming undergraduate students. This service has been more applied to first year entering students. However, the respondents are not convinced that the service is assisting to improve student performance of the BSc ECP students.

The respondents concluded that the BSc ECP approach instils laziness in the students. They also questioned the merits of using untrained lecturers for a group of students that were already viewed to be at-risk due to their perceived needy backgrounds and matric results that were inadequate for straight admission into the mainstream BSc degree programmes. The respondents stated that the pass rates among the BSc ECP in almost all the SMU BSc streams were relatively very poor compared to the mainstream groups.

Regarding the possibility of employing specialised lecture facilitators to be the ones involved in the BSc ECP groups, the respondents indicated the frustrations when asking for additional lecturers. They state that they usually struggle to receive support at both the level of the school leadership as well as the levels of the human resources division who are the ones having the authority to appoint staff.

The split of modules into halves for the BSc ECP does not seem to provide any added advantage for BSc learning. It only gives a burden of requiring many more lecturers. The academics did not know any rational logic used in this split. Also, separating this group from the mainstream BSc group seems to instil a relaxed mood that translates into poor relative performance in the long term. The BSc ECP students are viewed in some instances as

Table 2: Proposed BSc ECP Model

| 'AS IS' BSc ECP | | 'TO BE' BSc ECP | |
| --- | --- | --- | --- |
| BSc ECP I | BSc ECP II | BSc ECP I | BSc ECP II |
| Five first semester BSc I modules | Five second semester Bsc I modules | Compulsory English module BSc I modulein curriculum butan unlikely major Two BSc I modules, likely majors | Tow BSc I modulein unlikely major One module aimed to be taken at second year level |

Normal student support; intensified student support

groups of underperformers allowed in the ECP to study together. That setting seems to lack pace setters and standard raisers.

In addition, SMU does not provide specialised teaching for the groups which are viewed as already at-risk by virtue of low pass scores when applying to enter university. The lecture facilitation does not provide any specialised student performance enhancement, since in some cases, inexperienced lecturers are appointed for the ECP lecturing purpose.

The proposals to be provided with experienced and/or trained staff to facilitate lectures for the BSc ECP students does not seem to receive support at any level that should be assisting the departments. There seems to have been no problem with the BSc ECP groups being given more time to engage with content than the mainstream group. However, the approach used in splitting the BSc I modules for the BSc ECP I and II does not seem to provide any learning benefits or superiority in the BSc study programmes for students.

**Model:** From the discussions, any alternative model proposed should ensure the benefits intended for the BSc ECP without denying them the training for the challenges of the mainstream BSc degree. The five BSc I modules should be kept as they are in order for the two groups to attend together. However, to extend the time required for the BSc ECP, the ECPs should be allowed fewer modules during enrolment. English is compulsory and necessary for the other modules. Hence, it should be the first one taken in the ECP I level. The model should be mindful also that the modules at BSc II should have been taken the previous year. Hence, at BSc ECP I the modules proposed are the ones likely to be dropped immediately while those to be taken at BSc ECP II should be the ones likely to be taken at BSc II and III levels. The proposed BSc ECP structure is Table 2.

**Merits of the proposed model:** The proposed model suggests two modules in the first year of the BSC ECP and three modules in the second year. The modules taken in the first year ECP should be those which will be dropped immediately after the first year. Those planned for higher levels are proposed to be taken in the second year, so that when the BSc ECP joins the mainstreamers at BSc II level, they would still remember what they did in the previous year. These students should be provided with adequate student support in order to assist their performance. With this pattern, the students get to realise that their potential does not warrant splitting a module into two halves for them to perform. However, they are only made to realise that they have potential but their performance is boosted when they are allowed only two modules in the first year for a lower workload to enable them to recuperate. There is a larger chance to pass and even obtain high marks. BSc ECP studentsare expected to also gain confidence when they pass, especially with high marks. The module allows gradual development of the student.

## CONCLUSION

The ECP group do some BSc II year courses after a full year of no exposure to their first year prerequisites while most of the mains treamers would have done the same courses in the previous year. This could be one reason why the ECPs produce inferior results compared to the mainstreamers. On safeguarding the ECP intended desirable pass rates, an improvement model is thus, proposed where the curriculum for each individual student is designed according to the envisaged major subjects. The visualised benefits of the proposed model are confidence building for students, higher pass rates and improved throughput rates.

## RECOMMENDATIONS

In order to train the BSc ECP group for the BSc challenges, it is recommended that the:

- BSc ECP should not be separated from the mainstream BSc in lectures for similar study content
- BSc group should set pace for the BSc ECP to get used to the BSc mode, the same modules of the BSc should be taught at the same time for the BSc ECP
- Extended time period for the BSc ECP should be maintained to provide the needed time to engage with the study content

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