

【原著】

Building a Smarter BECC Grades Database

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複合的かつ効率的なBECC成績データベースの構築について

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Abstract

The BECC (Bunkyo English Communication Center) Grades Excel Database was developed in late 2020 as a comprehensive data system for all university students who take BECC courses. The database contains records of all BECC course student grades dating from 2016. Students are organized by cohort, and the database catalogues individual grade point averages and rankings, total BECC classes taken, in-house and professional exam scores, and Self Access Learning Center (SALC) usage. Teachers enter their grades into this database once per semester and can use it to look up an individual student's profile or a cohort snapshot. The database also contains a course grade point average archive that aggregates grade point averages and letter grade counts across all department and stream permutations of a selected course. This paper discusses the development of this database before detailing its structure and functionality along with a reflection on its current and future usage.

概 要

BECC（文教イングリッシュコミュニケーションセンター）の成績管理用エクセルデータベースは、BECCのコースを受講している全生徒のデータを複合的に管理するために2020年に作成されたものである。このデータベースには2016年以降BECCコースを受講した全生徒の成績が収められている。生徒情報はコホートで分類しており、データベースは個人の成績評価（グレードポイントアベレージ；以降GPAとする）、BECCの受講クラスや学科実施テストのスコア、また自律学修センター（SALC）の利用状況も含んでいる。講師は学期ごとに1度成績を入力し、生徒個人個人の統計やその時のコホートの状況を検索することができる。また、データベースには、選択したコースにおけるすべての学部とストリームの組み合わせにわたるGPAと成績を集計するコースGPAアーカイブも含まれている。本論では、このデータベースの開発について論じた後、その構と機能の詳細、そして現在および将来における使用法について考察する。

The Need for a New Grades Database

The Bunkyo English Communication Center (BECC) at Hiroshima Bunkyo University is an autonomous language center that facilitates eighteen courses across all departments and

grade levels as well as operates the university's Self Access Learning Center (SALC). The flagship course, English Communication I through IV, commonly known as Freshman English for English Communication I and II, Sophomore English for English Communication III and IV, and General English for all four semesters, is a CEFR-aligned (COE, 2020) mandatory course for first year students and optional course for all non-Global Communication (GC) majors in the second year. Furthermore, the BECC has operated an additional six mandatory courses for first through third year GC majors, elective versions of four of these courses for Education majors, and a further ten elective courses for third- and fourth-year students (although not all elective courses are offered each semester or year). These courses are summarized in Table 1 below:

Table 1 – BECC Courses by year and department

Year	Course	Department Code (see Table 2)					Notes
		E	W	P	N	G	
1	English Communication I/II	M	M	M	M	M	Also called Freshman English. Department combinations vary by year (currently EPG / WN).
	Basic English Communication I/II	O				M	Separate courses by department.
	Reading Strategies I/II	O				M	Separate courses by department.
	Writing Strategies I/II	O				M	Separate courses by department.
2	English Communication III/IV	O	O	O	O	M	Also called Sophomore English. Department combinations vary by year (currently all mixed)
	Reading Strategies III/IV					M	
	Writing Strategies III/IV					M	
3*	English Workshop III/IV	O	O	O	O	O	Also called Junior English. All departments mixed (since 2017).
	International Communication Strategies I/II	O				M	Separate courses by department.
	Academic English I/II					O	
	Business English I/II					O	
	Digital Research Methods					O	
	English for Education I/II					O	
	Hospitality English I/II					O	
	English in Popular Culture I/II					O	
Tourism English I/II					O		
4	English Workshop III/IV	O	O	O	O	O	Also called Senior English. All departments mixed.
	International Communication Strategies III/IV					O	
	Academic English	O					

M = Mandatory course; O = Optional course

*Some courses not offered every semester or year

Bunkyo students are streamed upon entering the university based on their Bunkyo English Test 1 (BET1) score, an internally conducted exam. At the conclusion of Freshman English, all students take the BET2, while students completing the Sophomore English course take the BET3. These tests and their scores will be referenced below. Additionally, in Table 1 above as well as future tables and figures, code names for Bunkyo departments will be referenced. These are summarized in Table 2 below:

Table 2 – Bunkyo Departments and Codes

Department Full Name	Code	Department Full Name	Code
Education *Includes Primary and Secondary Education majors	E	Nutrition	N
Psychology	P	Global Communication	G / GC
Welfare	W	Early Childhood Education *Inactive as of 2019	ECE

While the university as a whole utilizes the online Universal Passport system for scheduling, class rosters, and grading, the BECC has internal systems that are more commonly used by its staff. Enhanced systems for course streaming (see Svien, 2019) and in-house test evaluation and analysis (see Sugg et al., 2020 and Svien, 2022) had been created by the General English Assessment Committee in prior years, but the BECC’s internal grades database remained largely unchanged through 2020. Teachers’ grades were input into annually created spreadsheets placed on the server by the BECC Director. These sheets were broken into General English courses, Education courses, and Global Communication courses, with class lists for each class provided. The sheets calculated an average grade for each course. For General English courses, this additionally contained calculations for each class and stream (entitled A2-B1 High, A2-B1 Low, and A1-A2, corresponding to approximate CEFR levels and goals of the students), done manually each year. This grade point average (GPA) data was then reported by the BECC Director to Bunkyo administration. These sheets needed to be recreated annually, with formulas for which classes to count as which streams adjusted each year.

In the second semester of 2020, to provide opportunities for awards and recognition, the BECC Global Communication Course Coordinator requested a database to track Global Communication students’ GPAs specifically on BECC courses through their four years of university. This data could be used to identify the students with the highest average BECC course GPA in addition to the students who took the most BECC classes. In late 2020, the two of us made a prototype database for the 2020 graduating GC cohort with some sample course data. I was then tasked with expanding this small database to include all BECC course grades from 2017-2020 for this cohort, which was accomplished by culling grade data from each of the annual grading spreadsheets. This task was more complicated than it appeared, since as outlined above each year’s data was kept in one of three different workbooks per year.

However, since grading records for each year were being accessed to acquire data for this cohort, it was convenient to pull not only the records of this single GC cohort but of all university students. Outside of a student’s entire university transcript on Universal Passport, the BECC had no internal way of pulling up an individual student’s data and checking all

BECC grades or class rankings. Furthermore, since the data was so fractured, annual GPA comparisons of courses and course streams were difficult without a centralized source for data consolidation. Thus, the scope of the project expanded into the creation of a comprehensive BECC gradebook that housed all university students' historic BECC course data in a single location. Accordingly, work on the newly formulated BECC Grades Excel workbook began in earnest in late 2020.

Developing a New Database

As stated, the initial step in creating the BECC Grades database was simple yet tedious: going through five years (2016-2020) of class cohorts and grades from 18 courses and replicating the data into a single master student data tab. Toward facilitating an interface for data entry, grades were not housed in this tab but instead linked via lookup formulas to a grading tab for each individual course that mirrored the prior grade documentation system in order to keep the system familiar to teachers. A student profile tab was also developed, where an individual student's grade progress and cohort ranks could be perused, as well as a tab for viewing and sorting data from a single cohort apart from the others. These will be discussed in turn below.

1. Master Student Data Tab

The heart of the BECC Grades database is the Master Student Data tab. This tab contains data for all Bunkyo students dating back to 2016, including names, student ID numbers, entry and exit year cohort, sex, and department. Figure 1 below shows some sample data from the tab. In this and all future figures, all student names, ID numbers, and grades have been wholly fabricated to avoid disclosure of any personal information.

Master Student Data								
Entry Year (Apr 20xx)	SID	Dept	Last Name	First Name	Sex	BECC Classes	BECC GPA Cohort Rank	BECC GPA
2021	2111901	11 Ed-Primary	Kenji	Tsugumichi	M	16	08 of 41	3.88
2021	2111902	11 Ed-Primary	Endo	Eba	M	2	37 of 41	1.00
2021	2111903	11 Ed-Primary	Hamano	Machi	F	10	23 of 41	3.20
2021	2111904	11 Ed-Primary	Handa	Rieko	F	2	29 of 41	2.00
2021	2111905	11 Ed-Primary	Hiroto	Yumi	F	4	09 of 41	3.75
2021	2111906	11 Ed-Primary	Ichinomiya	Honami	F	2	24 of 41	3.00
2021	2111907	11 Ed-Primary	Imamura	Yoshihiro	M	2	01 of 41	4.00
2021	2111908	11 Ed-Primary	Kamenashi	Hatsuka	F	2	12 of 41	3.50
2021	2111909	11 Ed-Primary	Kanbayashi	Aiko	F	4	24 of 41	3.00

Figure 1 – Master Student Data Tab Core Data Example (all names and data fabricated)

At the beginning of each academic year, the newest cohort of students is added to the database. As an example, Figure 1 above shows nine students from an imaginary 2021 Primary Education Department cohort, who would have been loaded into the database at the start of 2021 along with the rest of the year's enrollees. Since the database counts students in each entry and department cohort, students who quit the university are removed periodically to a hidden archive tab to keep accurate cohort counts. The Master Student Data tab houses

numerous pieces of data for each student, which will be described in turn below.

1.1 BECC Classes, GPA, and GPA Cohort Ranking

As shown in Figure 1 above, the first three columns to the left of the student identification data display the total number of BECC classes (counting by semester) taken by each student, the student’s combined GPA across BECC classes, and their GPA rank among students from the same entry year and department. In the example, 2110907 Yoshihiro Imamura has a 4.00 BECC GPA, resulting in the highest score in his cohort (first out of 41). It can also be seen that despite his 8th out of 41 cohort ranking, 2111901 Kenji Tsugumichi has taken 16 BECC classes with a 3.88 GPA, indicating exceptional performance with an S grade in nearly every class. One other student has taken 10 BECC classes, with all others having taken only four or two (four classes usually indicate a student has taken only Freshman and Sophomore English, while two classes indicate a student has taken only Freshman English, being the only mandatory class for non-Global Communication students). Cohort ranks are automatically updated if a student’s exit year cohort is updated (such as in the case of gap years or time off for study abroad programs).

1.2 Course Grades

Stretching to the right of the BECC GPA column are two columns for each BECC course, one per first and second semester. Each of these columns is linked via an indirect Excel formula to its respective course tab. Once a grade has been entered into the course tab, the respective column will automatically be populated and the student’s BECC course count, GPA, and GPA cohort ranking will be updated. An example of students’ Freshman course grades is depicted in Figure 2 below.

Master Student Data				Freshman Courses							
SID	Dept	Last Name	First Name	FE		BEC		Readi	Readi	Writin	Writin
				1	2	1	2	ng	ng	g	g
2111901	11 Ed-Primary	Kenji	Tsugumichi	S	S	S	S	S	S	S	S
2111902	11 Ed-Primary	Endo	Eba	C	C						
2111903	11 Ed-Primary	Hamano	Machi	A	A	S	S	A	S	A	A
2111904	11 Ed-Primary	Handa	Rieko	B	B						
2111905	11 Ed-Primary	Hiroto	Yumi	S	S						
2111906	11 Ed-Primary	Ichinomiya	Honami	A	A						
2111907	11 Ed-Primary	Imamura	Yoshihiro	S	S						
2111908	11 Ed-Primary	Kamenashi	Hatsuka	S	A						
2111909	11 Ed-Primary	Kanbayashi	Aiko	A	A						

Figure 2 – Master Student Data Tab Freshman Course Grades Example (all names and data fabricated)

In Figure 2, the grades for the four Freshman courses across each of their semesters can be seen. Two students (2111901 and 2111903) elected to take all available Freshman courses, and all others took only the mandatory Freshman English class (labeled FE).

1.3 Bunkyo English Test and English First Standard English Test Scores

To the right of the course grades are columns for students’ Bunkyo English Test (BET) and English First Standard English Test (EF SET) scores and cohort rankings. Figure 3 shows

an example BET data set.

Master Student Data					BETs						
SID	Dept	Last Name	First Name	BET1%	BET2%	BET3%	Average	BET Cohort Rank	Avg Impr (BET2&3 /BET1)	Impr Cohort Rank	
2111901	11 Ed-Primary	Kenji	Tsugumichi	92%	93%	95%	93%	08 of 41	2%	24 of 41	
2111902	11 Ed-Primary	Endo	Eba	75%	79%		77%	19 of 41	5%	20 of 41	
2111903	11 Ed-Primary	Hamano	Machi	66%	66%	70%	67%	28 of 41	3%	21 of 41	
2111904	11 Ed-Primary	Handa	Rieko	88%	84%		86%	12 of 41	-5%	31 of 41	
2111905	11 Ed-Primary	Hiroto	Yumi	97%	99%	100%	99%	02 of 41	3%	23 of 41	
2111906	11 Ed-Primary	Ichinomiya	Honami	88%	100%		94%	06 of 41	14%	14 of 41	
2111907	11 Ed-Primary	Imamura	Yoshihiro	84%	91%		88%	11 of 41	7%	18 of 41	
2111908	11 Ed-Primary	Kamenashi	Hatsuka	69%	69%		69%	26 of 41	0%	27 of 41	
2111909	11 Ed-Primary	Kanbayashi	Aiko	53%	77%	88%	72%	22 of 41	56%	01 of 41	

Figure 3 – Master Student Data Tab BET Scores Example (all names and data fabricated)

The data for each of these are kept in separate hidden tabs in the database and are updated annually by the Assessment Committee or the Assistant Director. Bunkyo English Test scores contain cohort (entry year and department) ranks averaged among however many of the three exams the student has taken. BET improvement percentages (comparing the average of BET2 and 3 to BET1) and improvement cohort ranks are also calculated. For the EF SET, scores and CEFR grades for reading, listening, and the entire test are displayed.

The example in Figure 3 above shows the BET 1, 2 and 3 scores and averages for nine students in an example Primary Education cohort. Among these nine students, four of them took the BET3, indicating they also took Sophomore English. Their average BET scores and their BET cohort average are displayed to the right of their test scores. In this example, 2111906 Yumi Hiroto has the second highest average BET score in her cohort of 41 students with a 99% average. 2111909 Aiko Kanbayashi has the highest improvement in her cohort by scoring 77 and 88 on the BET2 and BET3, respectively, against her initial BET1 score of 53, a 56% average improvement.

1.4 SALC Usage

Finally, each student’s SALC program usage is tracked at the far right of the database. This data is pulled from a hidden SALC Programs tab that is updated by the SALC Coordinator once per semester. An example is shown in Figure 4 below.

In addition to total Advising Session, Free Talk Session, and Eiken Interview Training Session counts, the database tracks if students have participated in supplementary SALC programming, such as TOEIC Training, the Independent Learning Program, and the Speaking Program. (For further details on these programs, see Rutson-Griffiths & Svien, 2021 and Rutson-Griffiths & Svien, 2022). The database then counts how many SALC services the student has utilized so that the most active SALC users can easily be sorted or counted. In this example, four of these nine example Primary Education students have taken advantage of SALC advising and programming. The most active student, 2111905 Yumi Hiroto, has joined four services, including Advising Sessions, Free Talk Sessions, and the TOEIC Training and Independent Learning Program.

Learning Advisors can use this data prior to Advising Sessions to check for prior SALC usage, which helps tailor the session contents. Advisors can take time to introduce SALC

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Master Student Data				SALC Advising + Programs						
SID	Dept	Last Name	First Name	Advising Session	Free-Talk Session	Eiken Session	TOEIC Training	ILP	Speaking Program	Total Program
2111901	11 Ed-Primary	Kenji	Tsugumichi	8	10		Yes			3
2111902	11 Ed-Primary	Endo	Eba							
2111903	11 Ed-Primary	Hamano	Machi	2						1
2111904	11 Ed-Primary	Handa	Rieko							
2111905	11 Ed-Primary	Hiroto	Yumi	12	4		Yes	Yes		4
2111906	11 Ed-Primary	Ichinomiya	Honami							
2111907	11 Ed-Primary	Imamura	Yoshihiro	4	4					2
2111908	11 Ed-Primary	Kamenashi	Hatsuka							
2111909	11 Ed-Primary	Kanbayashi	Aiko							

Figure 4 – Master Student Data Tab SALC Advising & Programs (all names and data fabricated)

programs to students with little prior experience, while students with program experience can reflect on their successes and challenges and consider how they can continue gaining value out of further programming. Furthermore, SALC Assistant Managers can utilize the data to base student hiring decisions for SALC student staff or Open Campus assistants, as prior SALC usage indicates a level of experience and enthusiasm for the SALC that they can share with other users or prospective students. The database does not track SALC Lounge usage, event participation, or simply using the SALC for materials checkout or studying, as tracking systems for these are not currently in place.

2. Individual Course Tabs

Each course tab contains a simple list of the students enrolled in that course for the academic year along with the department grouping and class numbers of the individual class sections. An example is shown in Figure 5 below.

Add new students to bottom of list. Include year, class number (add 0 before single digits), class departments, SID, and grades.
Please kindly deactivate any filters when you finish your work.
See the Instructions + FAQ tab if you need any help.

Freshman English (Eng Com 1&2)							Editable Columns	Protected Columns
Year	Class	Class Dept(s)	SID	Last Name	First Name	Master Check	Term 1 Letter Grade	Term 2 Letter Grade
2021	FE01	EPG	2111901	Kenji	Tsugumichi	Okay	S	S
2021	FE01	EPG	2111905	Hiroto	Yumi	Okay	S	S
2021	FE01	EPG	2111906	Ichinomiya	Honami	Okay	A	A
2021	FE01	EPG	2111910	Kanno	Masashi	Okay	A	B
2021	FE01	EPG	2111914	Miyazaki	Sumi	Okay	B	B
2021	FE01	EPG	2111921	Okane	Chigusa	Okay	B	B
2021	FE01	EPG	2111929	Takamitsu	Masakazu	Okay	S	S
2021	FE01	EPG	2111936	Wakasugi	Sachi	Okay	S	A
2021	FE01	EPG	2112902	Aki	Suezo	Okay	S	S
2021	FE01	EPG	2112906	Egawa	Hikari	Okay	A	B

Figure 5 – Freshman English Course Tab Interface Example (all names and data fabricated)

A few weeks after the start of the spring term, either the Assessment Committee (until 2023) or the Assistant Director (2024 onward) populates the course tabs using student rosters that have been confirmed with the individual course teachers and appends the respective course year, department groupings, and class numbers. Teachers may also add students

manually to the list, and instructions for filtering and sorting the rosters are provided. To avoid errors, the student names are not typed manually but instead populated automatically via formulas linked to the student numbers, and any number not found in the master database results in a warning message.

At the end of each semester, each teacher opens his or her respective course tab and adds grades for each student in his or her class. Only official grades (i.e., single letters 'S' through 'E' along with 'MC' and 'MD') are recognized by the database: this allows flexibility regarding alternate explanatory text in case a grade was not awarded and does not result in database errors. Once a class is complete, a screenshot is taken and provided to a second teacher for cross-checking against Universal Passport.

The example in Figure 5 above shows grades for ten FE01 class students from the 2021 academic year. The EPG designation indicates the class was mixed with Education, Psychology, and Global Communication students. Grades from S to B across both semesters can be seen. All grades from the course tabs are relayed to the Master Student Data tab, delineated by semester. For students who failed a particular semester with a D and attempted makeup coursework in the following semester, teachers retroactively replace the D grade with an MC (for Makeup C) if the coursework was completed or MD (for Makeup D) if the coursework was failed. Furthermore, the same student may be listed in multiple classes across multiple years in case the student was required to retake the course. The database is set up to prioritize the highest grade per semester. For example, if a student received an MD grade in term 1 of a course in their first year but then received a B grade for the same course in term 1 of their second year, the Master Student Data tab would display the B grade for that course and term.

Finally, hidden off screen and only accessed by the administrator, all course tabs contain semester and year respective GPA aggregations and letter grade counts by class departmental configuration and stream. This data is used with the Course GPA Archive tab, explained below.

3. Student Report and Cohort Search Tabs

The database contains an individual Student Report, which displays a single student's grades, cohort rankings, SALC usage, and test scores in a single page report format. This data is retrieved from the Master Student Data tab based on the specified student ID number. An example student is shown in Figure 6 below.

BECC Student Report		Enter Student ID:	2111901	Name:	Tsugumichi Kenji	Display Ranks (Y/N):	Y						
Overall GPA						BECC Freshman Courses							
Department	Entry Cohort Year	Grad Year	BECC Class Count	BECC GPA	GPA Cohort Rank (Entry Year)	FE 1 (Eng Com 1)	FE 2 (Eng Com 2)	BEC 1	BEC 2	Reading Strategies 1	Reading Strategies 2	Writing Strategies 1	Writing Strategies 2
Ed-Primary	2021	2025	16	3.88	08 of 41	S	S	S	S	S	S	S	S
BECC Sophomore Courses				BECC Junior Courses				BECC Senior Courses					
SE 1 (Eng Com 3)	SE 2 (Eng Com 4)	Reading Strategies 3	Reading Strategies 4	Writing Strategies 3	Writing Strategies 4	JE 1 (Eng Wksp 1)	JE 2 (Eng Wksp 2)	KCS 1	KCS2	SNE 1 (Eng Wksp 3)	SNE 2 (Eng Wksp 4)	KCS 3	KCS 4
S	A					S	S	A		S	S		
BECC Elective Courses													
Academic 1	Academic 2	Business 1	Business 2	ORS 1	Education 1	Education 2	Hospitality 1	Hospitality 2	PopCulture 1	PopCulture 2	Tourism 1	Tourism 2	
S													
BETs				SALC Advising + Programs						EF SET			
BET1 %	BET2% (vs BET1%)	BET3% (vs BET1%)	BET Average	BET Average Cohort Rank	Advising Sessions	Free Talk + Eiken Sessions	TOEIC Training	Independent Learning Program	Speaking Program	Total Programs	High Reading Score (CEFR)	High Listening Score (CEFR)	High Total Score (CEFR)
92.3%	93.4% (+1.2%)	94.5% (+2.4%)	93.4%	08 of 41	8	10	Yes			3			

Figure 6 – BECC Student Report (name and data fabricated)

The report in Figure 6 above displays 2111901 Kenji Tsugumichi’s grades, test scores and improvement percentages, SALC usage, and cohort rankings in order to provide a complete picture of his performance at the BECC. In this report, we learn the student has taken BECC classes every year and maintained a high level of performance and additionally has utilized several SALC programs and services. We also learn that this student has placed 8th overall in their cohort of 41 students on both their BECC GPA and their BET score and has utilized three different SALC programs and services, including 18 total advising and free talk sessions as well as the TOEIC Training Program.

The Cohort Search tab provides a streamlined version of the Master Student Data tab, allowing for the selection and sorting of the students within a single department and cohort. Figure 7 below shows an example 2021 Primary Education cohort.

Entry Year:		2021		Department:		Primary Education Department (+ECE)						Freshman Courses							
Entry Year (Apr 20xx)	Grad Cohort (Mar 20xx)	SID	Dept	Last Name	First Name	Sex	BECC Classes	Cohort / Dept BECC GPA Rank	BECC GPA	FE 1	FE 2	BEC 1	BEC 2	Reading 1	Reading 2	Writing 1	Writing 2		
2021	2025	2111915	11 Ed-Primary	Miyazato	Koiso	F	8	01 of 41	4.00	S	S	S	S	S	S	S	S		
2021	2025	2111930	11 Ed-Primary	Teramoto	Katsumoto	F	4	01 of 41	4.00	S	S								
2021	2025	2111907	11 Ed-Primary	Imamura	Yoshihiro	M	2	01 of 41	4.00	S	S								
2021	2025	2111922	11 Ed-Primary	Omori	Sachio	F	2	01 of 41	4.00	S	S								
2021	2025	2111925	11 Ed-Primary	Shinohara	Shunsuke	F	2	01 of 41	4.00	S	S								
2021	2025	2111929	11 Ed-Primary	Takamitsu	Masakazu	F	2	01 of 41	4.00	S	S								
2021	2025	2111935	11 Ed-Primary	Uzumaki	Ryou	F	2	01 of 41	4.00	S	S								
2021	2025	2111901	11 Ed-Primary	Kenji	Tsugumichi	M	16	08 of 41	3.88	S	S	S	S	S	S	S	S		
2021	2025	2111937	11 Ed-Primary	Yamasato	Ruru	F	8	09 of 41	3.75	S	S	S	S	A	S	A	S		
2021	2025	2111905	11 Ed-Primary	Hiroto	Yumi	M	4	09 of 41	3.75	S	S								
2021	2025	2111923	11 Ed-Primary	Sakakibara	Inaho	F	4	09 of 41	3.75	A	S								
2021	2025	2111908	11 Ed-Primary	Kamenashi	Hatsuka	M	2	12 of 41	3.50	S	A								
2021	2025	2111917	11 Ed-Primary	Nagai	Yoshisada	F	2	12 of 41	3.50	S	A								

Figure 7 – Cohort Search Tab (sorted by BECC GPA) (all names and data fabricated)

All data from the Master Student Data tab is replicated for the selected cohort. This provides the convenience of comparing cohorts without the need for filtering or scrolling through the entire database. In Figure 7, the students have been sorted first by BECC GPA and secondly by total BECC courses. In this cohort, 2111915 Koiso Miyazato boasts a 4.00 BECC GPA and has taken more classes than other students in the cohort who also have a 4.00 GPA. 2111901 Kenji Tsugumichi has the most BECC classes with 16 (the grades for which continue further to the right of what Figure 7 shows).

Building a Course GPA Archive

After meeting with the BECC Director and Global Communication Course Coordinator regarding the still-prototype version of the database, a second main functionality was requested: aggregates of all grading data per course, stream, and year. Until now, this data was tabulated within each spreadsheet (primarily for Freshman and Sophomore English courses) and requiring manual recreation each year, so an automated system would be a welcome addition. However, the primary barrier toward doing so was the plethora of department and streaming combinations inherent to each course.

1. Database Considerations

Each of the 18 BECC courses has contained a variety of department and stream combinations since 2016, and each needs classification in order to make accurate data comparisons between them. Business English is a simple example: until 2023, there was only one class section of Business English per year open only toward Global Communication students, so no special sorting was necessary: all students attended one mixed level class together. However, due to the number of enrollees in 2023, two streams were created of differentiated levels, high and low. For GPA and letter grade count comparisons, these two streams should not be used in comparison to the previous mixed cohorts. However, in 2024, the class went back to the one single mixed class format, which does allow for comparisons.

A second example is Basic English Communication: to date, there have been eight different permutations of the course, as outlined in Table 3 below:

Table 3 – Basic English Communication Year by Year Course Configurations

Year	Global Communication				Education			ECE*
	High	Medium	Low	Mixed	High	Medium	Low	Mixed
2016	0	0	0					0
2017	0		0					0
2018	0		0					0
2019	0	0	0		0	0	0	0
2020	0	0	0		0	0	0	
2021	0		0		0	0	0	
2022	0		0		0	0		
2023	0		0		0		0	
2024				0 (x2)	0	0	0	

*Early Childhood Education

As shown in Table 3, Basic English Communication has had as many as seven class sections and as few as three, spanning three different departments and four ability levels. Furthermore, while certain streams do overlap year by year, only once (2017-2018) has there been two consecutive years with exactly the same class stream format. However, even this system is simple in comparison to the Freshman and Sophomore English courses, which contain multiple sections of identical department and ability levels: since 2016, there have been forty-two different combinations of departments and stream levels across these courses, with varying counts of each specific department and course stream. Each year's class numbers do not correspond with the previous year's; thus, an FE01 class in one year may be an EG A2-B1 High stream class in one year and an EPG A1-A2 stream in the next.

2. Formulating the Database

Consolidating all of these combinations into a single database presented a unique challenge. Toward building the database, a year-by-year record of each BECC course, course level, and department combination was created, a sampling of which can be seen in Figure 8 below.

The database codifies the courses and sections using a lookup index value, replicated

Building a Smarter BECC Grades Database

Year	Course			Department	Level	Stream Name	Stream Index	Stream Instance	Stream/Section Index
	ID	Class	Lookup Index						
2024	FE	FE01	FE-2024-FE01	EPG	A2-B1 High	FE EPG A2-B1 High 1	11	1	
2024	FE	FE08	FE-2024-FE08	EPG	A2-B1 High	FE EPG A2-B1 High 2	11	2	
2024	FE	FE04	FE-2024-FE04	EPG	A2-B1 Low	FE EPG A2-B1 Low 1	12	1	
2024	FE	FE05	FE-2024-FE05	EPG	A2-B1 Low	FE EPG A2-B1 Low 2	12	2	
2024	FE	FE06	FE-2024-FE06	EPG	A2-B1 Low	FE EPG A2-B1 Low 3	12	3	
2024	FE	FE02	FE-2024-FE02	EPG	A1-A2	FE EPG A1-A2 1	13	1	
2024	FE	FE03	FE-2024-FE03	EPG	A1-A2	FE EPG A1-A2 2	13	2	
2024	FE	FE07	FE-2024-FE07	EPG	A1-A2	FE EPG A1-A2 3	13	3	
2024	FE	FE09	FE-2024-FE09	EPG	A1-A2	FE EPG A1-A2 4	13	4	
2024	FE	FE10	FE-2024-FE10	EPG	A1-A2	FE EPG A1-A2 5	13	5	
2024	FE	FE11	FE-2024-FE11	WN	A1-A2	FE WN A1-A2 1	16	1	
2024	FE	FE12	FE-2024-FE12	WN	A1-A2	FE WN A1-A2 2	16	2	
2024	FE	FE13	FE-2024-FE13	WN	A2-B1	FE WN A2-B1 1	17	1	53
2024	BEC	FE18	BEC-2024-FE18	E	High	BEC E High 1	44	1	
2024	BEC	FE17	BEC-2024-FE17	E	Medium	BEC E Medium 1	45	1	
2024	BEC	FE16	BEC-2024-FE16	E	Low	BEC E Low 1	46	1	
2024	BEC	FE14B	BEC-2024-FE14B	G	Mixed	BEC G Mixed 1	50	1	95
2024	BEC	FE15B	BEC-2024-FE15B	G	Mixed	BEC G Mixed 2	50	2	96

Figure 8 – Annual Course Database (2024 Partial Example)

in each line of the individual course tabs, so the database knows how to codify each grade. It also counts the unique instance of each of these parameters to determine if it is a new or previously seen course configuration. Figure 8 above shows the 2024 database for Freshman English (FE) and Basic English Communication (BEC) courses. The highlighted rows indicate courses not seen in prior years, either an entirely new stream (such as with the FE13 WN A2-B1 stream or the BEC FE14B G Mixed stream) or a new section (such as FE15B, a second section of the BEC G Mixed stream). These index numbers are referenced in hidden columns of the individual course tabs and contain column titles that match the streaming parameters. They also house the GPAs per year from that stream and the aggregate count of letter grades from a designated year (set in the Course GPA Archive, described below). For Freshman and Sophomore English, aggregations for identical streaming sections (e.g., EPG A2-B1 High Stream) and individual sections within streams (e.g., EPG A2-B1 High Stream Class 2) are delineated.

3. The Course GPA Archive

All of the hidden data (year-by-year GPAs and letter grade counts) from each individual course tab is accessible in a single location: the Course GPA Archive tab. This tab is represented in Figure 9 below.

Users first select the course from the highlighted cells at the top of the screen, as well as the year to be highlighted. Both of these can be seen at the top of Figure 9 above. Data is then retrieved from the hidden data aggregate section of the corresponding course tab via indirect Excel formulas. Since all data from the individual course tabs is found in identical locations within each tab, the database only needs to switch this indirect reference to display the new data.

The first two columns display the aggregated GPAs per semester per year among all streams. To the right, GPAs are separated into department and class stream configurations and

2023		-24 Academic Year		Course:		Basic English Communication																		
BEC Cohort GPA Averages														Section GPA Averages										
Year	All REC-1	All REC-2	G High REC-1	G High REC-2	G Medium	G Medium	G Low REC-1	G Low REC-2	G Mixed REC-1	G Mixed REC-2	E High REC-1	E High REC-2	E Medium REC-1	E Medium REC-2	E Low REC-1	E Low REC-2	ECE Mixed	ECE Mixed	G Mixed 1 REC-1	G Mixed 1 REC-2	G Mixed 2 REC-1	G Mixed 2 REC-2		
2016	3.37	2.83	3.49	3.05	3.36	3.38	2.62	2.38																
2017	3.19	2.96	3.85	3.59			2.36	2.08																
2018	3.34	2.88	3.76	3.71			2.99	2.36																
2019	2.64	2.34	3.00	2.85	2.54	2.83	1.93	2.08			3.22	2.76	2.67	2.06	2.77	2.31			3.44	3.46				
2020	2.71	2.27	2.99	2.40	2.69	2.37	2.35	2.09			3.11	3.56	2.16	2.43	1.62	1.71								
2021	2.72	2.44	3.13	2.83			3.35	2.65			2.89	2.93	2.28	1.67	3.05	2.38								
2022	2.89	2.31	2.99	2.21			1.61	1.35			2.80	2.98	2.04	2.35										
2023	2.98	2.53	2.65	2.23			2.83	2.27			2.41	2.86			2.13	2.51								
2024	2.55								2.65		3.05		2.67		1.85							2.87		3.11

BEC 2023 Cohort Letter Grades										Section Letter Grades														
2023	All REC-1	All REC-2	G High REC-1	G High REC-2			G Low REC-1	G Low REC-2			E High REC-1	E High REC-2			E Low REC-1	E Low REC-2								
S	14	13	7	7			5	3			1	2			1	1								
A	18	13	7	4			5	4			2	2			4	3								
B	10	15	2	5			3	5			4	3			1	2								
C	6	6	3	4				1							3	1								
D	1	3	1	2																				
E								1																
MC		1						1																
MD																								

Figure 9 – Course GPA Archive (Basic English Communication Modified Example)

later by section if applicable. For each combination, two columns are created in the database to house the stream’s GPA data. Therefore, in addition to viewing the historic data, it is also clear how each class was configured year by year (i.e., number of classes, number of streams, and department groupings). The bottom table displays the letter grade counts for the selected year that made up that stream or section’s GPA. Only columns that correspond to the year’s actual streams and sections are labeled and contain data; those from a configuration not used in the chosen year are left blank.

Figure 10 above shows a modified example of the historic GPAs by department and stream for Basic English Communication (to avoid disclosure of privacy, grades have been fabricated while only loosely retaining their original trends). The headings in the top table align with the department and stream groupings as outlined in Figure 8 above; cells with missing data indicate the stream was not used that year. As 2023 is selected in the top left corner, the 2023 data is likewise highlighted. Furthermore, the grade letters (adjusted for privacy) earned by all students per stream are shown in the bottom table for the four streams of the course taught in 2023. From this example data, it could be discerned that Basic English Communication 2 is slightly harder than Basic English Communication 1, as the GPAs tend to decrease in the second semester. Furthermore, there is an expected majority of cases where the higher stream’s GPA is higher than its corresponding lower stream. Nonetheless, exceptions do occur, such as in the 2023 GC stream data, where the lower stream’s grades are slightly higher than the high stream’s.

This allows administrators to check for data discrepancies; for example, if two classes of the same department and stream combination have distinctly different GPAs and letter grade totals, if a lower ability stream is receiving considerably higher grades on average than a higher ability stream, or if a disproportionate number of students from a particular class section is failing with D or E grades. While the data should not be used in a vacuum to make actionable recommendations, it can provide insight in terms of potential teacher feedback or professional development workshops.

At the end of the semester, the streaming GPAs and letter grade counts are reported by the BECC Director to Bunkyo administration. Thus, the Director only needs to select through each course sequentially and save the data in an appropriate sharable format.

Teacher Training, Facilitation, and Reflection

The database was completed in January 2021, and I presented the database to the BECC beginning in April 2021. The first presentation focused on its existence as a new project, background of its creation, and core functionalities. A few months later, I presented again regarding how to add grading data and how to update and sort rosters. Videos of these presentations were kept on the server for future reference, and an instructions page was added with details on how to input grades, add missing students, and sort the course tabs to consolidate students into classes.

The password-protected database was adopted formally and used for the first time in August 2021. It was originally kept on the BECC server for data security purposes and edited by one user at a time. While this had its merits, it also resulted in some measure of user error, such as data being lost due to forgetting to save and close the database (as there was no autosaving function), or from other users not being able to input their grades in a timely manner since it was locked while another user was operating it. From the 2024 academic year, the database has been temporarily moved to Teams at the end of the term, and this seems to have solved many of these issues.

There are a couple further limitations with the database. First, a dedicated administrator is required to provide annual upkeep, fix any bugs or inadvertent data deletion, and do periodic maintenance (particularly on the Cohort GPA Archive when new course permutations are added). Although this process has been documented, it requires a level of precision and Excel knowledge, particularly if an error is inadvertently made and needs rectifying. Second, due to the database's numerous lookup and indirect formulas, the operating speed can be reduced on occasion, which has led to a measure of frustration with the user base. Accordingly, a conversion to formulas that reduce the processing requirement would be a welcome addition and should be further investigated.

Despite these limitations, the main functionality of consolidating all BECC grades into a single central source rather than split across multiple documents has overall been achieved, and the ultimate user experience has been simplified compared to the documentation method prior to 2021. Furthermore, the ability to view individual student data, including grades, test scores, and program participation, a snapshot of an entire cohort, and the historic progression and streaming of all BECC courses has made the database a valuable addition to BECC teachers, Learning Advisors, and administration. While one of the original purposes of the database, the presenting of awards to students with the highest BECC GPAs and courses taken, has yet to be realized, it is hoped that someday such steps could be taken as a way to boost student motivation and reward high achievers. Further awards, such as the highest BET improvement, the highest TOEIC improvement, and the most active SALC users, could also be presented some day in the future.

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