

## **Activity**

### **From chaos to database**

#### **An example of integrating Key Skills, Skills for Life and active learning.**

##### **Learner profiles**

The approach presumes that learners are new to database theory. Learners may be working at foundation level in a range of settings, including work-based learning, colleges, prisons or adult and community learning. They may well be on programmes that seek to improve their literacy, numeracy or language skills alongside learning ICT. Their teacher/trainer may be actively embedding Skills for Life in ICT sessions.

Learners will benefit from this activity even if they are not planning to study database theory at higher levels. Any learner who is going to input data into a database needs to understand what a database is and why it is useful.

##### **Resources**

The From Chaos to Database activity includes two sets of cards. Each set includes:

- 14 customer cards - of which six belong to the short set - shown by a square in the bottom right corner
- 48 product cards - of which 24 are part of the short set - shown by a star in the bottom right corner.

Normally, you could use all of the cards. Take care not to get the sets muddled. You may find it useful to mark the sets, for instance by punching a hole in a particular corner of each set.

The other components are an observer's recording sheet (for photocopying), a timer and three name cards which stand on the table.

You may also need:

- paper, flip chart paper and pens

**Learners may also use calculators. See the notes on embedding numeracy in the activity.**

## **Instructions**

### **Differentiation – the short set**

Within each pack of cards there are cards designated as part of a short set. This set can be recognised by a star or square in the bottom right corner of each card. These cards have less text and simpler presentation of the information. They can be extracted by the teacher/trainer to make the short set. The short set is recommended for groups where learners read slowly.

Follow the same instructions whether you are using the short set or the full set of cards. Decide whether your group will use all of the cards or the short set. Organise the room so that learners can work in groups of three.

### **Stage 1: Introduce the activity**

In this approach, the teacher or trainer is mainly in a facilitator role, with learners taking an active role throughout.

In order to get learners thinking about the topic, you might like to offer a few examples for them to think about.

- What if the programmes in the TV guide were all muddled up?
- What if the numbers in the phone book were in numerical order?

You can then introduce the activity by simply saying that the activity is about 'exploring how we handle information'. Do not introduce the term 'database' at the start and avoid referring to the activity as a role play.

### **Differentiation**

If you have learners who may find it hard to cope with the chaos element at the start of the activity, consider warning them that the activity is intended to be frustrating at the start. Some learners may also need time to go through the 'Rules' sheet with you and ask questions before they start. More confident learners will need minimal instructions.

## **Stage 2: First round**

For this activity learners should be organised into groups of three. Each learner takes turns as:

- customer
- sales person
- observer.

1. The unsorted product cards are held by the sales person.
2. The customer takes a customer card and asks the sales person for the relevant item(s).
3. Once the customer has asked for a product, the observer starts the timer.
4. The sales person searches through the cards until relevant products have been identified.
5. The sales person describes the item(s) to the customer, who then selects which item(s) they would like to purchase.
6. The observer stops the timer.
7. The observer records the time taken on the recording sheet.
8. The observer asks the questions on the recording sheet and records the answers.

This activity is repeated two more times, each learner taking turns as sales person, customer and observer. It is important for every learner to experience the frustrations that the sales person faces. At the end of the round, the observer enters the average time taken.

You may need to write up the formula 'A+B+C divided by 3' to remind learners how to calculate the average (mean).

## **Stage 3: The first plenary**

This takes place at the end of the first round.

The teacher or trainer enables learners to share their experiences of using the unorganised information. You might like to consider using the questions below.

You will find it useful to record and display the times from each group, so that they are ready for comparison after round two.

**Suggested questions:**

**How long did it take? (Ask each group and record answers.)**

**How easy was it for the sales person to find what the customer wanted?**

**How did it feel when you were the sales person?**

**When you were the customer, what did you think of the speed of service?**

**Why was it difficult to find the right products?**

**How could you do it differently, so that it is easier to find the right products?**

**Why might that make it easier?**

### **Stage 4: Small group work**

In their groups of three, learners experiment with organising the cards. They may use a method discussed in the plenary or may come up with another method. They agree on a method that they will try out in the second round and organise the cards accordingly.

#### **Differentiation**

More confident learners will be able to decide for themselves what the categories will be. Less confident learners may need support to identify possible methods of organising the cards.

### **Stage 5: Second round**

Learners now experiment with their proposed method.

1. The organised product cards are held by the sales person.
2. The customer takes a customer card and asks the sales person for the relevant item(s).
3. Once the customer has asked for the product the observer starts the timer.
4. The sales person searches for the product until relevant products have been identified.
5. The sales person describes the item(s) to the customer, who then selects which item they would like to purchase.
6. The observer stops the timer.
7. The observer records this time on the recording sheet.

8. The observer asks the questions on the recording sheet and records the answers.

This activity is repeated two more times, each learner taking turns as the sales person, customer and observer. At the end of the round, the observer enters the average time taken.

This takes place at the end of the second round. The teacher or trainer enables learners to share their experiences of using the organised information. You might like to consider using the questions below to encourage learners to evaluate the effectiveness of the method used. You will find it useful to record and display the times from each group so that they can be compared to those from round one.

### **Suggested questions**

**How did you organise the cards? (Ask each group.)**  
**How long did it take this time? (Ask each group and record answers.)**  
**Did you shorten the time with your new method of working? (Ask each group.)**  
**Did the sales people find it easier?**  
**How did the sales people feel this time?**  
**How did the customers feel this time about the speed of service?**  
**Did your method of organising the cards solve all of the problems? If not, why not?**  
**What problems did you encounter when trying to put the cards into the categories?**  
**Were there any products that were difficult to fit into categories? Why?**  
**Did you make any adjustments to your method as you were working it through? What did you do and why?**

### **Stage 7: Small group work**

In their groups of three, learners discuss other ways of sorting the cards and the possible pros and cons of the different methods. Each group is invited to identify alternative methods of organising and grouping the cards. They may like to list their ideas on flip chart paper. Each group feeds back their ideas at the start of the final plenary.

### **Differentiation**

More confident learners will be able to propose various ways of categorising the products and will be able to predict the consequences. Less confident learners will recognise the benefits of organising the cards, but may need help to identify all the possible methods. They may benefit from trying out several methods by running further rounds of the activity.

## Stage 8: Final plenary

This starts with the feedback from the previous group work, then a re-cap and reflection on the whole activity. The discussion then moves towards defining what a database is. Finally, the learning objectives are re-visited and the session is evaluated.

### **Suggested questions**

**Why was it hard to find the right products at the start?**

**What did we do to make the information easier to use?**

**So, what is a database?**

**Why do we need databases?**

**When are databases useful?**

At this point, learners should be able to identify the basic features of a database and come up with their own definitions of what a database is.

You may wish to allow learners a few minutes in their small groups to come up with a group definition. They should be able to produce something along these lines:

**'A database is a collection of information that is organised so that it is easy to use.'**

### **Differentiation**

With absolute beginners, you may accept any definition that includes concepts of organising or ordering the information. For more advanced learners, you may wish to offer textbook definitions, after they have offered their own definitions, and invite them to evaluate their own definitions.

### **Extension activity 1**

The teacher or trainer invites learners to come up with as many examples of databases as possible. This provides an opportunity to introduce the concept of manual and computerised databases and to discuss the advantages of using a computer to store and handle the data.

### **Possible examples**

- telephone book
- TV guide
- customer files in a filing cabinet
- names and addresses for membership of a gym
- motor vehicle registration records.

## **Extension activity 2**

A demonstration database is included in this activity.

The teacher or trainer invites learners to identify the similarities between the data on the product cards and the data displayed in this demonstration database.

Learners are invited to identify the features and benefits of the computerised database, using questions such as:

**What does it do?**

**What is good about it?**

# Embedding Skills for Life

## From Chaos to Database: Literacy

### Introduction

**From Chaos to Database motivates learners to practise a wide range of literacy skills in a relevant context. It is particularly good for encouraging the use of different reading strategies.**

There are 48 product cards. But 24 of them, the short set, have less text and clearer images, making them more suitable for learners who are weak readers, or for those who have a disability that slows down their reading. The teacher/ trainer must decide whether to use all of the cards or to use the short set.

In general, the activity is pitched at Entry 3/ Level 1. However, there are intentional inconsistencies in level, to keep a realistic feel and provide some challenges.

Organising and sorting information does not come naturally to some learners. They may find it difficult to put the products into categories but with your support they can improve their abilities in this area.

**From Chaos to Database: Mapped to the Literacy curriculum**

Aspect of activity	What the learner can practise	Entry 3	Level 1
Teacher's Introduction	Listen to the instructions for the activity. Ask questions to clarify the instructions.	SLIr/E3.1 SLC/E3.4	SLIr/L1.2 SLC/L1.2
Performing role of sales person or customer	Read the cards to identify the main points. Use a range of strategies – detailed reading, skimming and scanning. Relate the images to the product descriptions. Speak clearly when conveying information to the sales person or customer. Ask questions to clarify the customer's needs or what the sales person is offering. Listen for relevant information, using appropriate strategies to confirm understanding.	Rt/E3.4 Rt/E3.6/7/8  Rt/E3.9 SLC/E3.1  SLC/E3.4 SLIr/E3.3/4	Rt/L1.5   SLC/L1.1 SLC/L1.2  SLIr/L1.1/3
Performing the role of observer	Ask for information. Complete the observer's form legibly.	SLC/E3.4 Ww/E3.3	SLC/L1.2
Group work and plenaries	Follow and contribute to group discussions. Take turns to speak.	SLd/E3.1/2 SLd/E3.3	SLd/L1.1 SLd/L1.3

## Tips: Literacy

- Make sure you have sufficient information about your learners' literacy skills before running the activity. This will enable you to decide whether to use the short set with some or all of the learners.
- If you have a Skills for Life specialist in your organisation, consider asking them to help you plan the activity.
- Use two staff during the activity, if possible, so that you can support learners with literacy needs.
- Encourage learners with weak reading skills to take the customer role or observer role initially. They will find the sales person role more difficult, as there is more reading needed.
- A few learners may find the first stage of the activity difficult to cope with. They may attribute the difficulties to their lack of literacy skills. Reassure them that it is meant to be difficult and that the chaos is intentional. Their job is to work out **why** it is so difficult.
- If you see a learner struggling with reading a card, don't leave them to struggle. The activity is not intended as a test of reading ability.
- Encourage learners to use their speaking skills. The sales person should not just show the cards to the customer. By giving an oral summary of what is on the card, they will get more out of the activity. Remember that speaking is just as important as reading.
- Some learners, especially if they are dyslexic or have autistic spectrum disorder, may need extra support to categorise the products. You may need to supply them with the categories. You could do this by writing the categories on cards e.g. phones, toys. They can then sort the cards into the categories.
- Some learners may have difficulty moving from concrete to abstract concepts. Don't miss out any of the steps in the activity. Allow extra time after the first round for learners to explore **why** it is difficult to find the right products. They need to develop the concept of 'unsorted' before they can move on.
- Use the matrix which maps the activity to the Literacy curriculum to give feedback. This helps learners to understand how, during ICT classes, they are also improving their literacy skills.

# Embedding Skills for Life

## From Chaos to Database: Numeracy

### Introduction

**From Chaos to Database enables learners to explore issues around handling data that are highly relevant in both numeracy and ICT. The activity also integrates arithmetical elements that learners at Entry 3 and Level 1 will find useful, especially calculating amounts of money.**

**You can choose how to approach this. Your learners might like to practise mental methods, calculations on paper or using a calculator. All have their value.**

There are also many opportunities for learners to practise reading numerical information in the form of dates, prices, dimensions, weights and so on. The numerical information is presented in various ways. This level of complexity has been included intentionally, in order to give a flavour of the diversity that learners encounter in the real world. But, with a little help from you, they will enjoy the challenge of coping with the diverse numerical information that the cards contain.

**From Chaos to Database: Mapped to the Numeracy curriculum**

Aspect of activity	What the learner can practise	Entry 3	Level 1
Performing the role of sales person or customer	Read tables.	HD1/E3.1	HD1/L1.1
	Read amounts of money.	N1/E3.1	N1/L1.1
	Calculate amounts of money.	N2/E3.3	N2/L1.4
	Estimate the total spend.	MSS1/E3.1	MSS1/L1.1
	Compare the total money spent with the budget.	N1/E3.2	N1/L1.3
		MSS1/E3.2	N2/L1.5
	Calculate the total spend and the amount left with a calculator (optional).	N1/E3.7/8 N1/E3.1 N2/E3.4 MSS1/E3.1	N1/L1.8 N2/L1.5/7 N1/L1.1 N2/L1.4
Sales person	Reading dimensions in metric and Imperial units.	MSS1/E3.5 N1/E3.1	MSS1/L1.4
Performing the role of observer	Compare times to see which is faster/slower.	MSS1/E3.3	N2/L1.4
	Complete a table recording times.		HD1/L1.3
	Calculate the average time taken at the end of the round.		
All roles	Handling data.	HD1/E3.4	
	Organising data into categories.		



## Tips: Numeracy

- If, when you divide your class into threes, there is one person left over, you might want to appoint this learner as arithmetic checker. Issue the learner with the only calculator. Anyone can call on them to assist with a calculation.
- When discussing possible ways of categorising the products, encourage discussion of measurable criteria, such as size, weight and cost; even if these are then discounted as not the best way to sort the data. Introduce the concept of a range for a category e.g. £100-£150. Ask learners how this might affect how we see the products. If an item costing £99.99 falls into the category below an item costing £101, are we much more likely to buy the slightly cheaper item?
- Use the matrix which maps the activity to the Numeracy curriculum to give feedback. This helps the learner to understand how, during ICT classes, they are also improving their numeracy skills.
- Consider running a short activity prior to From Chaos to Database. Use it to check that your learners know how to calculate whether purchases are within budget. Use this as an opportunity to remind your learners how to use rounding (i.e. making £15.99 into £16.00) and estimating using near numbers. Check that they know how to calculate the average time taken at the end of each round. It might help to have this displayed: 'Add A, B and C then divide by 3' The letters A, B, and C refer to boxes on the observer's recording sheet.
- Many numeracy learners, especially at Entry 3, find counting on from a lower number to a higher number the natural way to find the difference between sums of money, rather than using subtraction. Shop assistants use this method to give change. It is a valid method.
- Decide whether it will be best for your learners to use mental methods, pen and paper or calculators during the activity. You might even give learners a choice.
- Encourage a mix of weaker and stronger learners in the small groups. They can then help each other.

### **Ideas for numeracy extension activities**

**Give the sales person a card that says: “Your head office has just announced a special 10% discount on all products”.**

**Ask the observer to record what is spent by the customer. At the end of the round the group calculates the total spend for that round.**

**Use an analogue clock to time the transactions so that the observer has to calculate the elapsed time.**

**If you use one of these ideas, be careful not to let it distract learners from the key messages about database concepts.**

# Embedding Skills for Life

## From Chaos to Database: ESOL

### Introduction

**From Chaos to Database is a particularly useful activity for the ESOL learners in your group. It allows them to practise a range of reading, speaking and listening skills in a meaningful context.**

The activity provides a safe environment (with a small group of peers) where they can take risks in order to achieve communication. The activity adapts to learners at different levels: confident learners can improvise, using the cards as prompts; while less confident learners can rely heavily on using the words and phrases supplied on the cards. Much of the language they will need will be familiar to them from their experience of shopping. The plenaries will present the biggest challenge, as abstract language is needed that they may not have met before. But at that point you will be leading the discussion and will be able to support them.

We have mapped the activity to Entry 3 and Level 1, as learning is likely to be optimised for these learners.

**From Chaos to Database: Mapped to the ESOL curriculum**

Aspect of activity	What the learner can practise	Entry 3	Level 1
Teacher's introduction	Listen to the instructions for the activity. Ask questions to clarify the instructions.	Lr/E3.1 Sc/E3.3	Lr/L1.2 Sc/L1.2
Performing role of sales person or customer	Read the cards to identify the main points. Use a range of strategies – detailed reading, skimming and scanning. Speak clearly when conveying information to the sales person or customer, using stress and intonation correctly. Ask questions to clarify the customer's needs or what the sales person is offering. Provide feedback and confirmation. Respond to familiar questions. Listen for relevant information, using appropriate strategies to confirm understanding.	Rt/E3.4 Rt/E3.6/7/8  Sc/E3.1 Sc/E3.3  Lr/E3.5 Lr/E3.2/3/4	Rt/L1.4 Rt/L1.5  Sc/L1.1 Sc/L1.2  Lr/L1.4 Lr/L1.1/3
Performing the role of observer	Ask for information. Complete the observer's form legibly and accurately.	Sc/E3.3 Wt/E3.5 Ww/E3.2	Sc/L1.2 Wt/L1.6 Ww/L1.2
Group work and plenaries	Follow and contribute to the group discussions. Express ideas and opinions. Take turns to speak.	Lr/E3.7 Sd/E3.1 Sd/E3.2	Lr/L1.6 Sd/L1.2 Sd/L1.3



## Tips: ESOL

- Support your ESOL learners during the plenary. Ask them questions like: 'Was it hard or easy to find what the customer wanted?' Give them time to think and answer. Don't expect them to be able to pull words like 'sorting' or 'categories' out of the blue. But you can check that they are following the discussion by asking 'Does sorting the cards make it quicker or slower?'
- Use the matrix which maps the activity to the ESOL curriculum to give feedback. This helps the learner to understand how, during ICT classes, they are also improving their language skills
- Ideally, allow your ESOL learners to see the cards prior to the activity. Allow them time to look up unfamiliar words and ask for guidance on pronunciation. We are not allowed to use real brand names on the product cards, so you may have to point out the fictional brand names and suggest a way of pronouncing them.
- Think carefully about what you are going to say when you give the instructions for the activity. Use the materials as visual aids. When you say 'product card' hold one up, and so on.
- Mix ESOL learners with native speakers in the small groups.
- Encourage your ESOL learners to take the customer role or observer role initially. They will find the sales person role more difficult. Let them tackle this after they have seen someone else do it.
- Encourage them to achieve the communication, not worry about grammar. Nods, gestures, pointing are all fine; just as long as they get their message across.

Claire runs a beginners ICT class that meets once a week in a college. She has two ESOL learners in the group, who also attend English classes. In the week prior to running From Chaos to Database she gives a set of the cards to the ESOL tutor, who looks at them with the two learners during an English workshop. They also revise language to do with shopping, for instance, 'I would like ...' They use the product cards to do this.

The two learners cope very well when Claire runs From Chaos to Database, but they do not speak during the plenary. Claire sits down with them for a few minutes at the end of the session and checks that they have understood the key concepts. She also gives them specific feedback on their language skills:

'You became very quick at finding the main points on the cards.'

'You asked just the right questions.'

Further ideas

**...for using From Chaos to Database resources during ICT sessions**

**...for using From Chaos to Database resources in other areas of learning**

- The activity can be used as an icebreaker or team building exercise.
- For learners who have been introduced to database table structure, the resources can be used to introduce queries.
- The activity can be run in the standard way, but instead of focussing on the database aspects, the learners can look at input, process and output.
- The product cards can be used to enable learners to identify and classify data types e.g. currency, text, numerical.
- Learners can be given the information from the product cards in the form of a Word table. They then design a table structure for products and input the data into the table. They can go on to create very simple queries using the data in the table.
- The product and customer cards can be used to introduce file management principles.
- Helping learners to understand why inventories and stock control are important in the motor vehicle trade.
- Learning the language of shopping – ESOL or EFL learners.
- Teaching reading strategies to literacy learners, especially skimming and scanning.
- As a customer care role play for retail apprentices.
- As a ranking exercise for numeracy learners ranking items by price.
- As a budgeting exercise for numeracy learners.
- Creative writing - using the customer cards as a stimulus.
- Transforming tabulated text to continuous prose and vice versa.

# From Chaos to Database

## Quick guide to key steps for teachers and trainers

<b>Stage 1: Introduction</b>	Optional – use the rules handout
<b>Stage 2: Round one</b>	Learners experience unorganised information
<b>Stage 3: First plenary</b>	Learners identify the drawbacks of unorganised information
<b>Stage 4: Small group work</b>	Learners propose a method of organising the information and sort the cards accordingly
<b>Stage 5: Round two</b>	Learners experiment with their proposed method
<b>Stage 6: Second plenary</b>	Learners share experiences of using organised information and evaluate the effectiveness of their method
<b>Stage 7: Small group work</b>	Learners identify the various ways of organising the information
<b>Stage 8: Final plenary</b>	Learners reflect on the whole activity and come up with a simple definition of a database

Time	Key stages	Teacher and trainer activity	Learner activity and assessment	Resources
10 minutes	<b>Stage 1: Introduction and instructions</b>	Give illustrative examples to start learners thinking about all the information around us and whether it is organised or not. Introduce aims of the session. Select groups - identify customer sales person and observer in each group. Hand out activity cards, observer sheets, note pads, pencils, calculators and timers. Introduce rules for the activity - any questions.	Learners get into groups and check that they have all the components.	Activity cards, rules, observer sheets, timer, note pads, pencils, calculators.
15 minutes	<b>Stage 2: First round</b>	Oversee first round. Support learners. Prepare headings for first plenary on whiteboard.	Read the rules and ask questions to clarify instructions.	As above.
10 minutes	<b>Stage 3: First plenary</b>	Collect average times from each group. Collect feedback on each question on observer's recording sheet. Facilitate discussion on effect of unorganised information and how things could be improved.	Check timers are working.	Observer sheets, whiteboard and pens.

Time	Key stages	Teacher and trainer activity	Learner activity and assessment	Resources
5 minutes	<b>Stage 4: Small group work</b>	Set task for learners to discuss how the cards could be organised. Agree on a method. Organise the cards accordingly. Support weaker learners by suggesting possible categories.	Discuss and agree how they will organise the information. Organise the product cards accordingly.	Product cards.
10 minutes	<b>Stage 5: Second round</b>	Oversee second round. Support learners. Prepare headings for second plenary on whiteboard.	Experiment with running the activity using organised information. Experience what it is like for the sales person, customer and observer.	Activity cards, rules, observer sheets, timers, note pads, pencils, calculators.
10 minutes	<b>Stage 6: Second plenary</b>	Collect average times from each group. Compare with first round. Collect feedback on each question on observer's recording sheet. Facilitate discussion on effect of organising the information and the issues encountered when trying to do this.	Learners discuss and feed back issues they found in sorting the cards to the class.	Observer sheets, flip chart paper, board markers.



Time	Key stages	Teacher and trainer activity	Learner activity and assessment	Resources
5 minutes	Stage 7: Small group work	Set task for learners: to come up with as many different ways as possible of organising the information. Support weaker learners by suggesting possible methods.	Come up with as many different ways as possible of organising the information. Record ideas on flip chart paper.	Flip chart paper and pens.
20 minutes	Stage 8; Final plenary	Invite groups to present their idea as Re-cap on whole activity. Facilitate discussion of what a database is, why we need them, when they are useful.	Present outcome from last task. Answer questions. Come up with a simple definition of a database. Contribute to group discussion.	Whiteboard.
5 minutes	Evaluation of session	Collect oral feedback on what learners feel they have learned. Hand out evaluation sheets.	Reflect on own learning. Give feedback. Complete evaluation sheets.	Evaluation sheets.

# The rules

**The customer and sales person must talk to each other, not just show cards to each other.**

**Product cards should not be handled until the customer has requested their items.**

**During the first round the product cards must not be sorted in any way.**

## **Step 1:**

Customer picks out a customer card.

Customer asks for the item(s) on their card.

Observer starts timer

## **Step 2:**

Sales person looks for suitable items and offers them to the customer.

Customer decides whether the items are suitable.

Observer stops the timer when the sales person has found the right item(s).

## **Step 3:**

Observer enters the time taken on the observer's recording sheet.

Observer asks the questions on the sheet and records the answers.

## **Step 4:**

Now change roles and follow steps 1, 2 and 3 again.

## **Step 5:**

Change roles again and follow steps 1, 2 and 3.

**You have now completed a round.**

**Enter the average time taken for the round on the recording sheet (A+B+C divided by 3).**